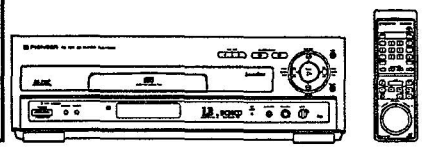
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
RRV1390

CD CDV LD PLAYER
CLD-V5000

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	CLD-V5000		
KU/CA	○	AC120V	

CONTENTS

1. SAFETY INFORMATION 2
2. EXPLODED VIEWS, PACKING AND PARTS LIST 3
3. SCHEMATIC AND PCB CONNECTION DIAGRAMS 12
4. PCB PARTS LIST 32
5. SELF-DIAGNOSTIC FUNCTIONS 36
6. CHECK FOR THE EXTERNAL INPUT 38
7. ADJUSTMENTS 39
8. IC INFORMATION 49
9. BLOCK DIAGRAM 57
10. PANEL FACILITIES 59
11. SPECIFICATIONS 60

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE, INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER ELECTRONIC (EUROPE) N.V. Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 501 Orchard Road, #10-00 Lane Crawford Place, Singapore 0923

© PIONEER ELECTRONIC CORPORATION 1995

T-IFB OCT. 1995 Printed in Japan

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

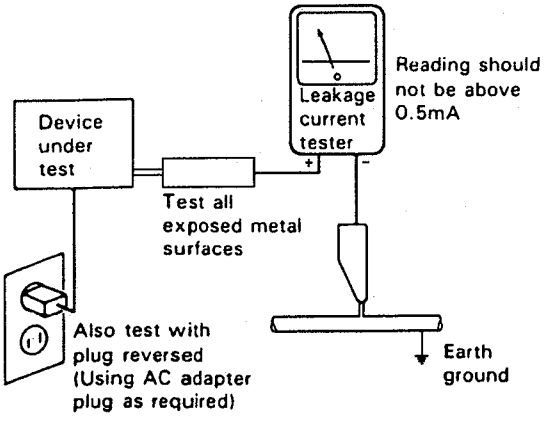
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. EXPLODED VIEWS, PACKING AND PARTS LIST

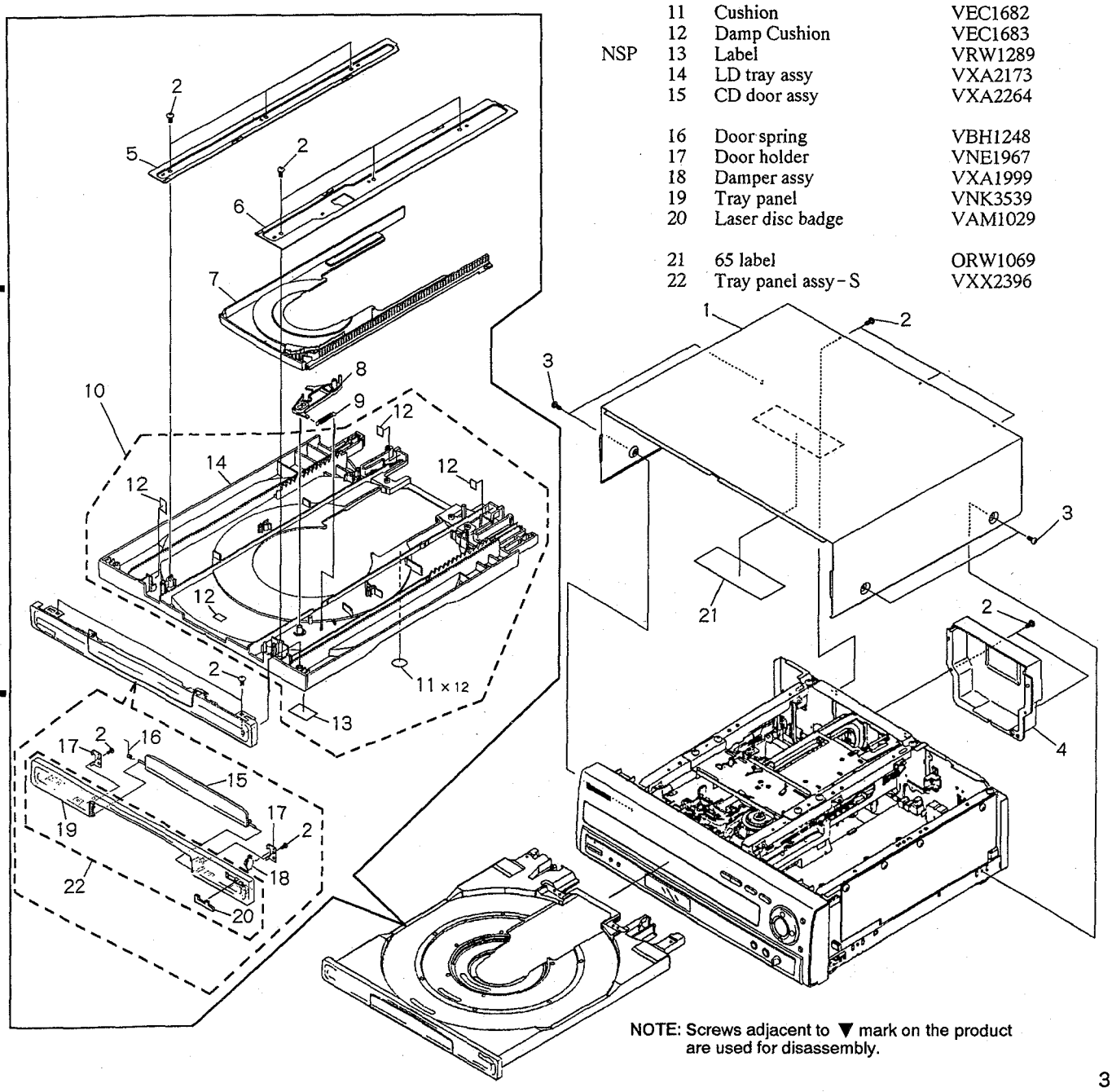
NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

2.1 EXTERIOR AND DISC TRAY SECTION

Parts List

Mark	No.	Description	Part No.
	1	Bonnet - S	VXX2394
	2	Screw	BBZ30P080FMC
	3	Screw	BCZ40P060FZK
	4	Rear cover	VNK3543
	5	Guide plate (R)	VNE1939
	6	Guide plate (L)	VNE1938
	7	CD tray	VNK3007
	8	Lock plate	VNL1703
	9	Lock plate spring	VBH1188
	10	Tray assy - S	VXX2307
	11	Cushion	VEC1682
	12	Damp Cushion	VEC1683
NSP	13	Label	VRW1289
	14	LD tray assy	VXA2173
	15	CD door assy	VXA2264
	16	Door spring	VBH1248
	17	Door holder	VNE1967
	18	Damper assy	VXA1999
	19	Tray panel	VNK3539
	20	Laser disc badge	VAM1029
	21	65 label	ORW1069
	22	Tray panel assy - S	VXX2396

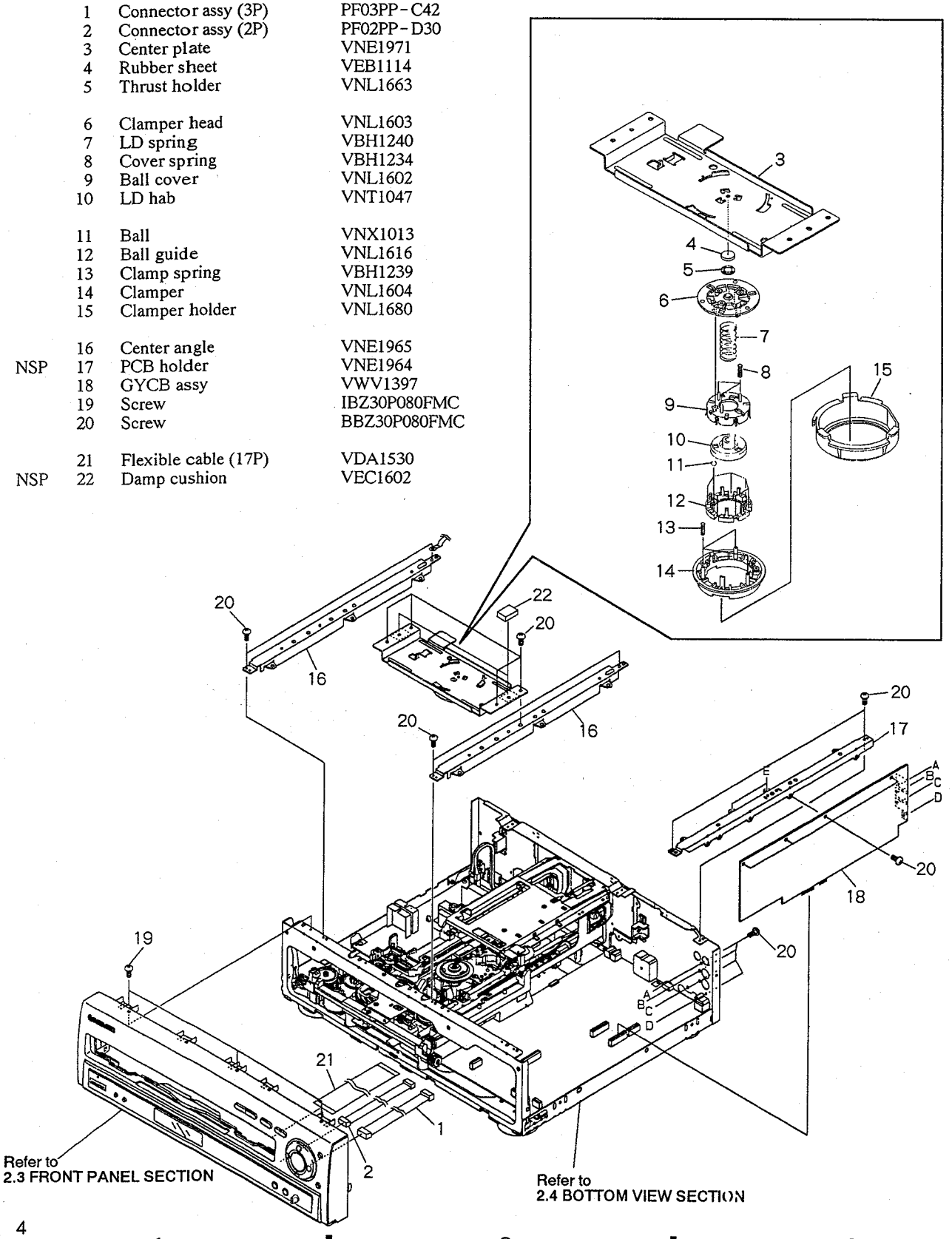


NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.

2.2 TOP VIEW SECTION

Parts List

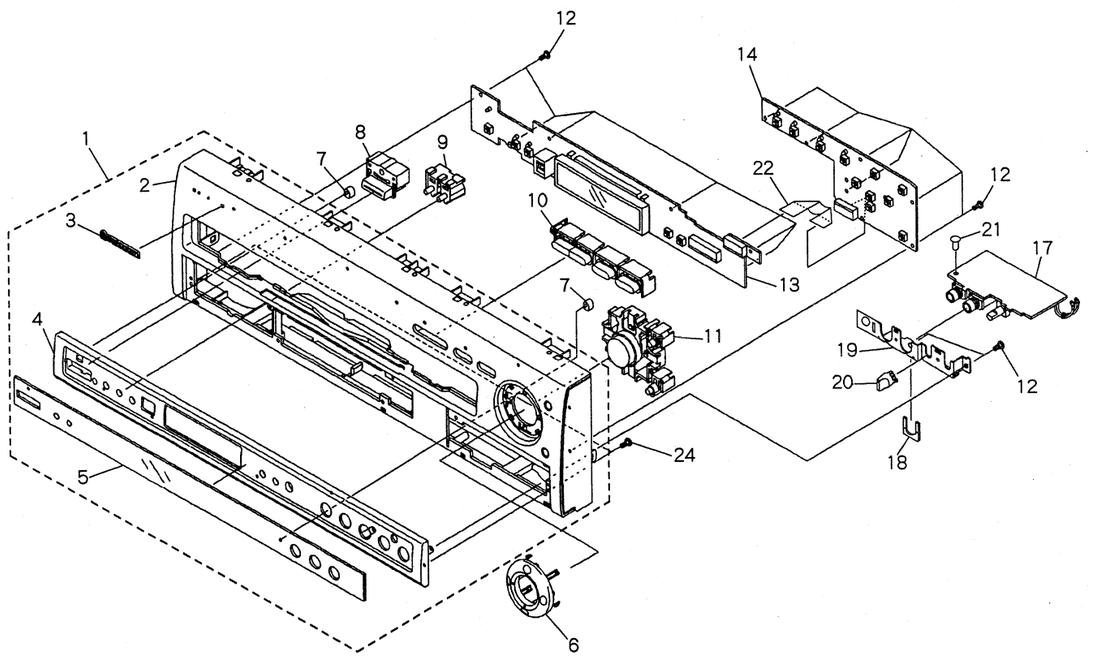
Mark	No.	Description	Part No.
	1	Connector assy (3P)	PF03PP-C42
	2	Connector assy (2P)	PF02PP-D30
	3	Center plate	VNE1971
	4	Rubber sheet	VEB1114
	5	Thrust holder	VNL1663
	6	Clamper head	VNL1603
	7	LD spring	VBH1240
	8	Cover spring	VBH1234
	9	Ball cover	VNL1602
	10	LD hab	VNT1047
	11	Ball	VNX1013
	12	Ball guide	VNL1616
	13	Clamp spring	VBH1239
	14	Clamper	VNL1604
	15	Clamper holder	VNL1680
	16	Center angle	VNE1965
NSP	17	PCB holder	VNE1964
	18	GYCB assy	VWV1397
	19	Screw	IBZ30P080FMC
	20	Screw	BBZ30P080FMC
	21	Flexible cable (17P)	VDA1530
NSP	22	Damp cushion	VEC1602



2.3 FRONT PANEL SECTION

Parts List

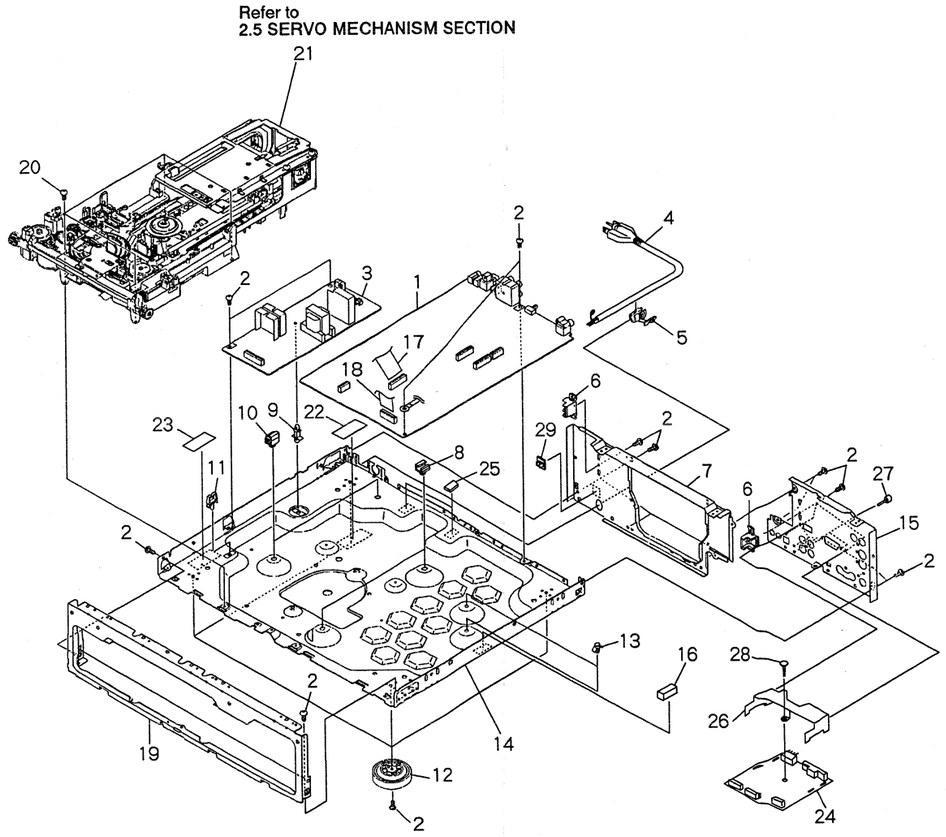
Mark	No.	Description	Part No.
	1	Front panel assy - S	VXX2395
NSP	2	Front panel	VNK3537
	3	Pioneer badge	VAM1050
NSP	4	Sub panel	VNK3538
	5	FL lens	VEC1844
	6	Key A	VNK3542
	7	LED lens	PNW2019
	8	PW button	VNK3544
	9	Key K	VNK2998
	10	L key	VNK2987
	11	Main key	VNK3541
	12	Screw	BBZ30P080FMC
NSP	13	FLKB assy	VWG1711
NSP	14	KEYB assy	VWG1712
	15	• • • • •	
	16	• • • • •	
NSP	17	HEPB assy	VWG1713
	18	Snap plate	VNE1102
	19	Jack holder	VNE2046
	20	Headphone knob	PAC1707
	21	Plastic rivet (A)	VEC - 179
	22	Flexible cable (13P)	VDA1496
	23	• • • • •	
	24	Screw	BPZ30P080FCC



2.4 BOTTOM VIEW SECTION

Parts List

Mark	No.	Description	Part No.
	1	MOTHER assy	VWS1241
	2	Screw	BBZ30P080FMC
⚠	3	SYPS assy	VWR1260
⚠	4	AC power cord	VDG1064
	5	AC cord stopper	VEC - 201
	6	Tray stopper	VNL1657
	7	Rear panel R	VNA1651
NSP	8	P plate holder	PNY - 405
NSP	9	PC support	VEC - 269
NSP	10	PCB hinge	VEC1174
NSP	11	Wire clip (H)	VEC1181
	12	Insulator	PNW1912
	13	Card spacer A	VEC1708
NSP	14	Chassis	VNA1461
	15	Rear panel L	VNA1650
	16	Spacer	REB1171
	17	Flexible cable (21P)	VDA1465
	18	Flexible cable (16P)	VDA1532
NSP	19	Panel holder	VNA1507
	20	Screw	BBZ30P100FMC
NSP	21	Mechanism assy	VWT1131
NSP	22	Fuse caution label (G)	VRW - 548
	23	F. ICP caution label	VRW1525
	24	MDRS assy	VWG1710
NSP	25	Rubber spacer	VEB1252
NSP	26	PCB holder	VNE2045
	27	Bolt #4 - 40/M2.6	DBA1078
	28	Plastic rivet (A)	VEC - 179
	29	Cord clamp L	DEC1578

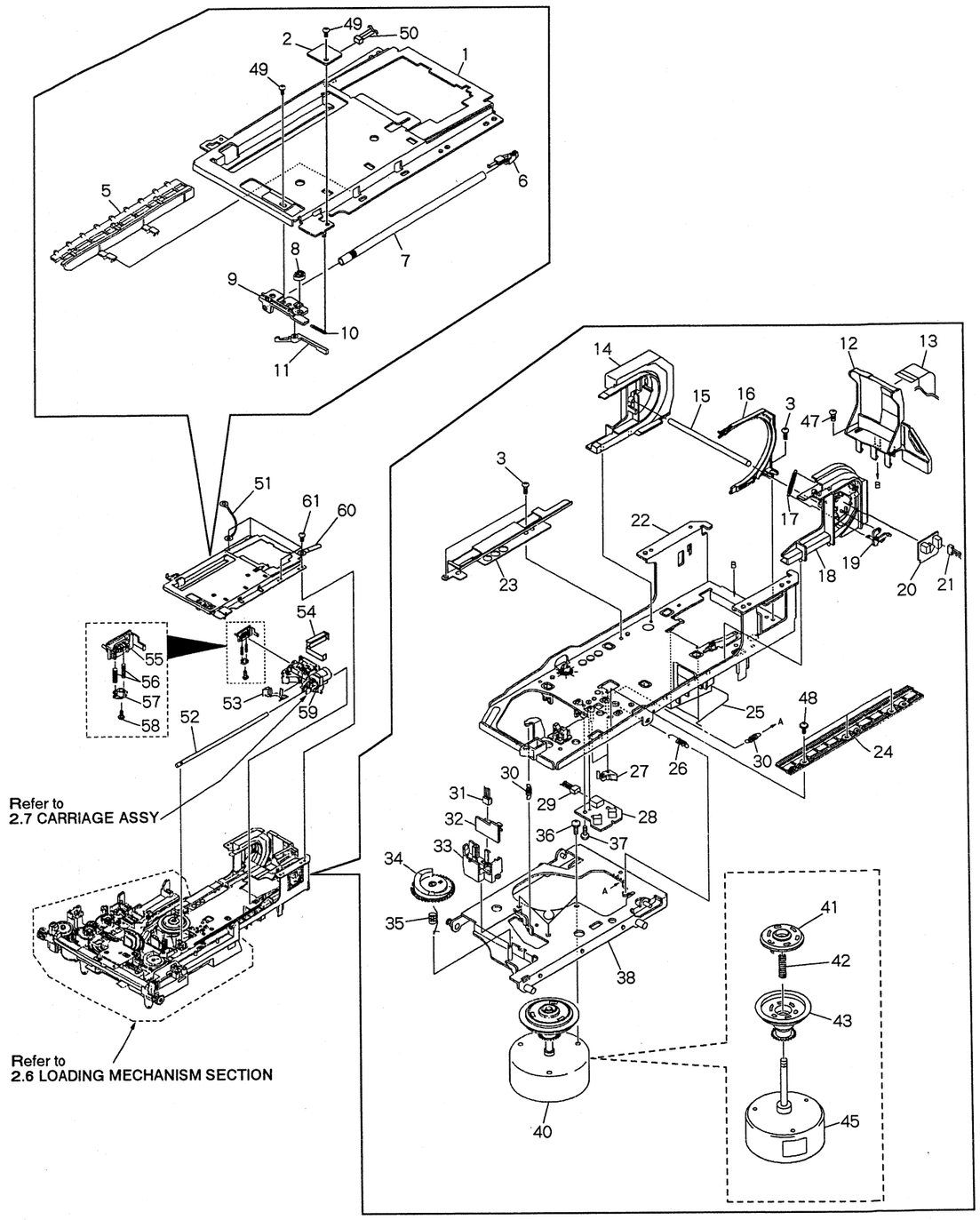


2.5 SERVO MECHANISM SECTION

Parts List

Mark	No.	Description	Part No.
	1	Tilt base (upper)	VNE1969
NSP	2	BISB assy	VWG1558
	3	Screw	BBZ30P060FMC
	4	• • • • •	
	5	Rack (upper)	VNL1679
	6	Shaft stay	VNL1671
	7	Carriage shaft (upper)	VLL1478
	8	B cam	VNL1673
	9	Shaft support	VNL1672
	10	Support spring	VBH1265
	11	SW lever (B)	VNL1678
	12	Large hill	VNL1682
	13	Flexible cable (23P)	VDA1528
	14	Turn guide	VNL1701
	15	FFC style shaft	VLL1474
	16	Guide	VNL1674
	17	Lever spring	VBH1266
	18	Turn gear	VNL1702
	19	SW lever (T)	VNL1695
NSP	20	TNSB assy	VWG1557
	21	Housing assy (3P, black)	VKP2059
	22	Tilt base (under)	VNL1670
	23	TAN guide	VNE1973
	24	CA rack	VNL1647
	25	FFC style spring	VBH1270
	26	Thrust spring	VBH1245
	27	CA - SW lever	VNL1644
NSP	28	PKSB assy	VWG1555
	29	Housing assy (3P, blue)	VKP2045
	30	Tilt spring	VBH1263

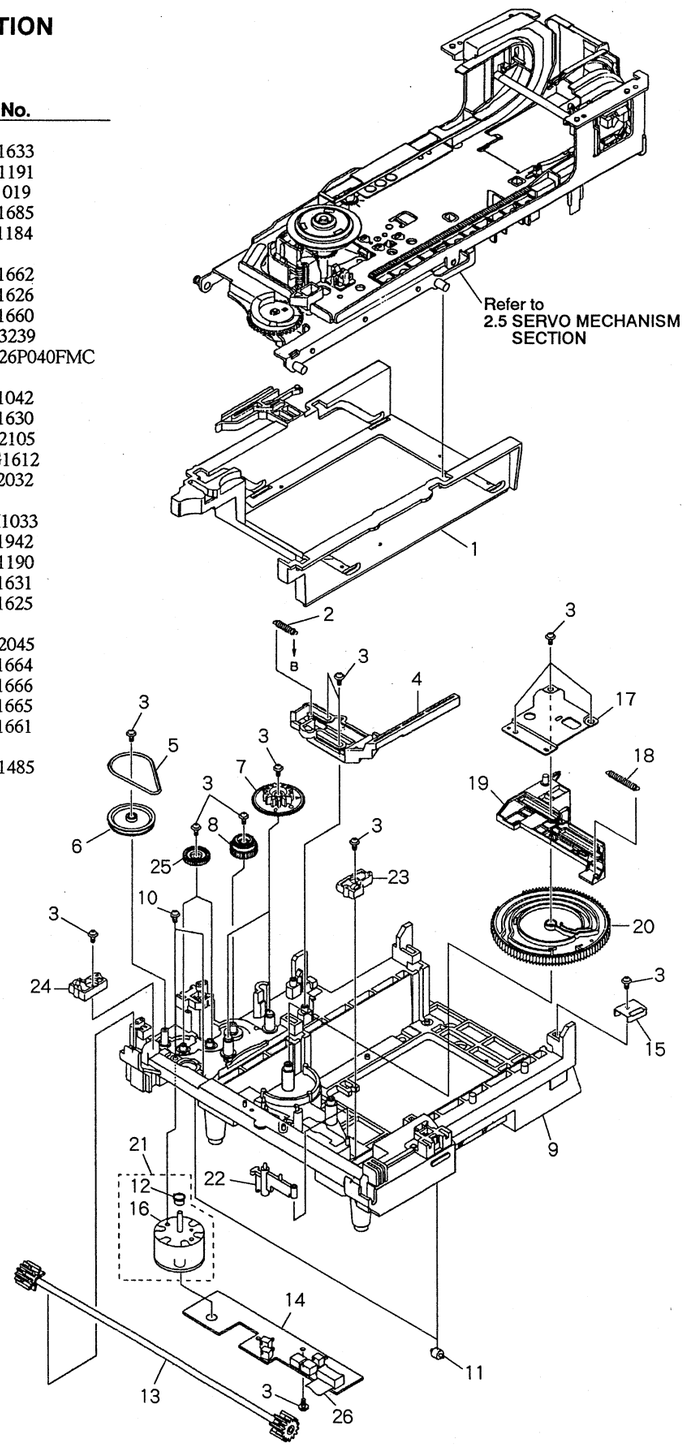
Mark	No.	Description	Part No.
	31	Housing assy (3P, yellow)	VKP2046
NSP	32	FG assy	VWG1556
	33	FG base	VNL1645
	34	Tilt cam	VNL1643
	35	Tilt cam spring	VBH1243
	36	Screw	PMA30P050FMC
	37	Screw	IBZ26P120FMC
	38	Motor base	VNE1941
	39	• • • • •	
	40	Spindle motor assy	VXA2271
	41	PRC hub	VNL1684
	42	Centering spring	VBH1269
NSP	43	R turn table assy	VXA2225
	44	• • • • •	
NSP	45	Spindle motor	VXM1057
	46	• • • • •	
	47	Screw	BBZ30P060FMC
	48	Screw	IBZ26P060FMC
	49	Screw	BPZ20P040FZK
	50	Housing assy (2P, red)	VKP2060
NSP	51	Earth lead unit	VDA1494
	52	Carriage shaft (under)	VLL1458
	53	Body guard	VNL1681
	54	FFC holder	VNL1706
	55	CA guide	VNL1668
	56	TAN spring (B)	VBH1264
	57	TAN lever (B)	VNL1669
	58	Screw	PMZ20P060FZK
	59	Carriage assy	VWT1110
NSP	60	Cord binder	ZCB-069Z
	61	Screw	BBZ30P080FMC



2.6 LOADING MECHANISM SECTION

Parts List

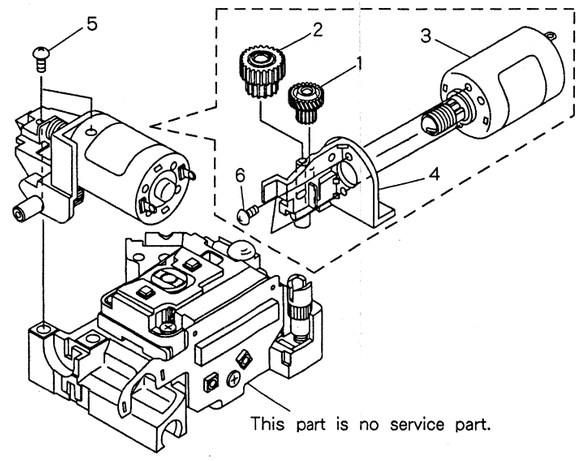
Mark	No.	Description	Part No.
	1	Clamp cam	VNL1633
	2	CDP spring	VBH1191
	3	Screw	Z39-019
	4	CD plate	VNL1685
	5	Rubber belt	VEB1184
	6	Gear pulley	VNL1662
	7	Twin gear	VNL1626
	8	Center gear	VNL1660
	9	Mechanism base	VNK3239
	10	Screw	BMZ26P040FMC
	11	Roller	VNL1042
NSP	12	Motor pulley	VNL1630
	13	Synchro gear assy	VXA2105
NSP	14	LMSB assy	VWG1612
	15	Cam holder	VNE2032
NSP	16	Carriage motor	VXM1033
	17	Shaft holder	VNE1942
	18	CAS spring	VBH1190
	19	Cam plate	VNL1631
	20	Cam gear	VNL1625
	21	Loading motor assy	VXX2045
	22	MB-SW lever	VNL1664
	23	Slider (R)	VNL1666
	24	Slider (L)	VNL1665
	25	Double gear	VNL1661
	26	Flexible cable (12P)	VDA1485



2.7 CARRIAGE ASSY

Parts List

Mark	No.	Description	Part No.
	1	CA gear (A)	VNL1638
	2	CA gear (B)	VNL1639
	3	Slider motor assy	VXX2082
	4	M holder	VNL1700
	5	Screw	PBZ20P060FMC
	6	Screw	PMZ20P030FMC



2.8 PA

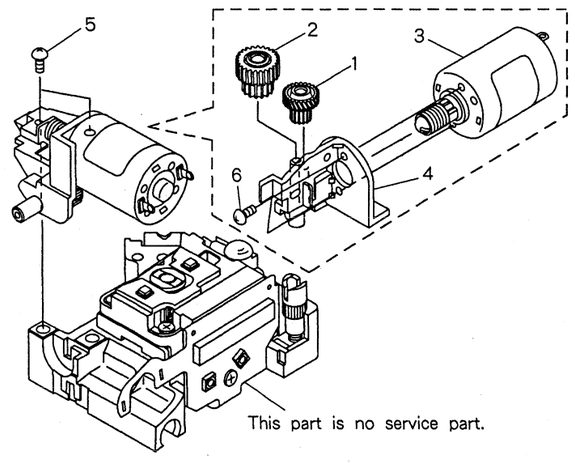
Parts Lis

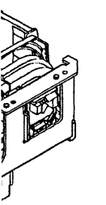
Mark	No
NSP	1
	2
	3
	4
NSP	5
	6
	7
	8

2.7 CARRIAGE ASSY

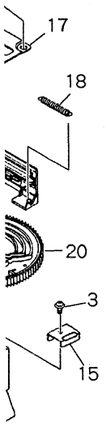
Parts List

Mark	No.	Description	Part No.
	1	CA gear (A)	VNL1638
	2	CA gear (B)	VNL1639
	3	Slider motor assy	VXX2082
	4	M holder	VNL1700
	5	Screw	PBZ20P060FMC
	6	Screw	PMZ20P030FMC





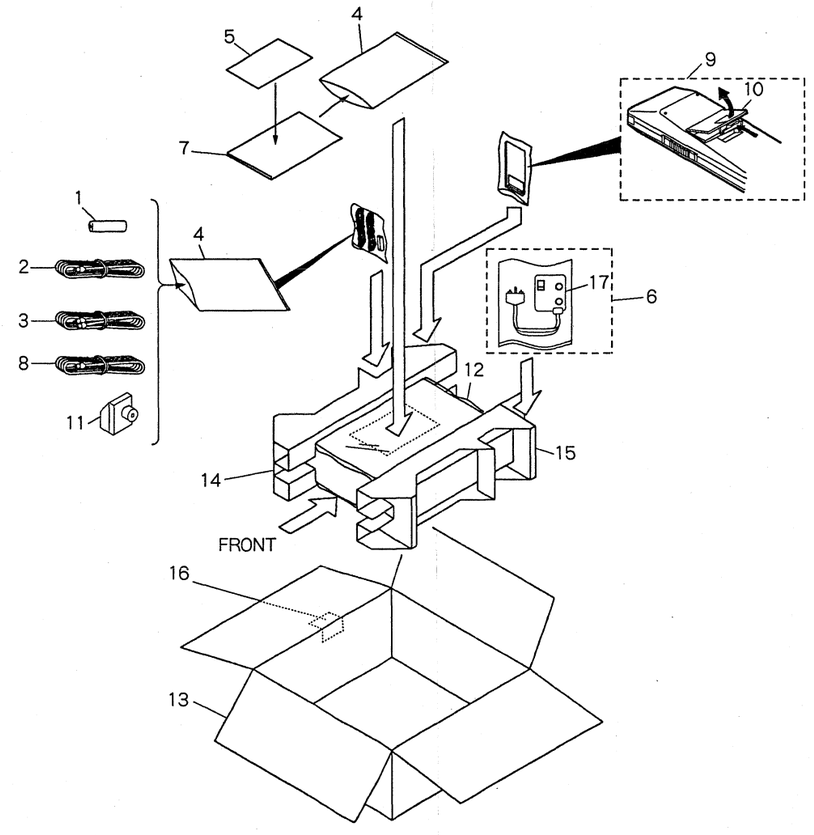
MECHANISM
N



2.8 PACKING

Parts List

Mark	No.	Description	Part No.
NSP	1	Dry cell battery (R03, AAA)	VEM-022
	2	Video cord	DDE1090
	3	Audio cord	DDE1089
	4	Polyethylene bag (0.03*230*340)	Z21-038
NSP	5	Barcode sheet	DRY1161
	6	RF modulator assy	DWX1516
	7	Operating instructions (English)	VRB1168
	8	RF antenna cable	VEE1001
	9	Remote control unit (CU-V151)	VXX2368
	10	Battery cover	VNK2431
	11	Antenna adaptor	VKX-020
	12	Mirror mat	VHL1006
	13	Packing case	VHG1526
	14	Protector	VHB1010
	15	Protector B	VHB1022
	16	Caution label	VRM1044
	17	RF modulator	VZW1002



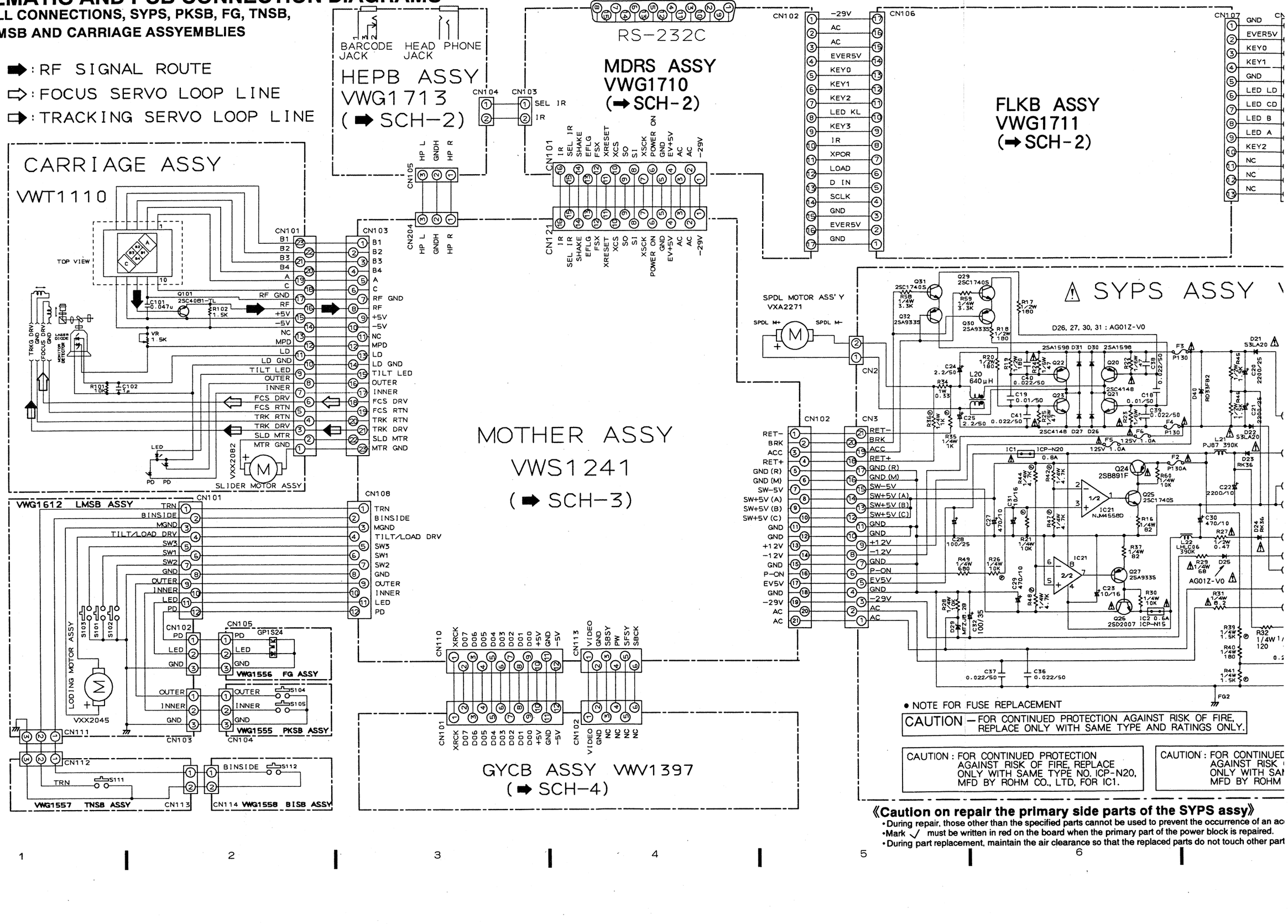
3. SCHEMATIC AND PCB CONNECTION DIAGRAMS

3.1 OVERALL CONNECTIONS, SYPS, PKSB, FG, TNSB, BISB, LMSB AND CARRIAGE ASSYEMBLIES

➡ : RF SIGNAL ROUTE

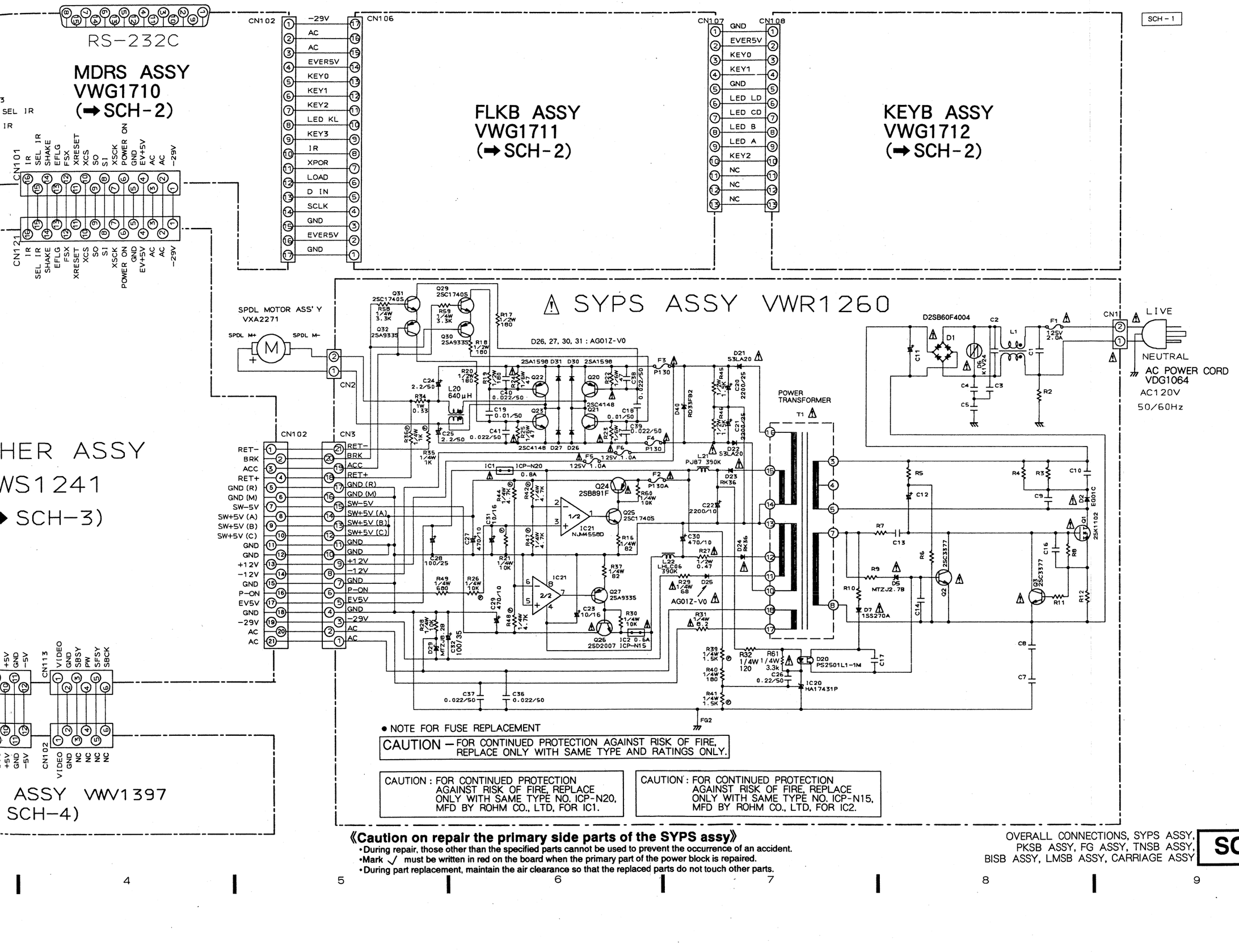
⇨ : FOCUS SERVO LOOP LINE

➡ : TRACKING SERVO LOOP LINE



OVERALL CONNECTIONS, SYPS ASSY, PKSB ASSY, FG ASSY, TNSB ASSY, BISB ASSY, LMSB ASSY, CARRIAGE ASSY

SCH-1



《Caution on repair the primary side parts of the SYPS assy》

- During repair, those other than the specified parts cannot be used to prevent the occurrence of an accident.
- Mark ✓ must be written in red on the board when the primary part of the power block is repaired.
- During part replacement, maintain the air clearance so that the replaced parts do not touch other parts.

OVERALL CONNECTIONS, SYPS ASSY, PKSB ASSY, FG ASSY, TNSB ASSY, BISB ASSY, LMSB ASSY, CARRIAGE ASSY

SCH-1

NOTE FOR SCHEMATIC DIAGRAMS

(Type 4A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:
Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance:(F):±1%, (G):±2%, (K):±10%, (M):±20% or ±5% unless otherwise noted.

4. CAPACITORS:
Unit : p:pF or μF unless otherwise noted.
Ratings : capacitor (μF) / voltage (V) unless otherwise noted.
Rated voltage : 50V except for electrolytic capacitors.

5. COILS:
Unit : m:mH or μH unless otherwise noted.

6. VOLTAGE AND CURRENT:
▭ or ←V :
DC voltage (V) in PLAY mode unless otherwise noted.
⇦mA or ←mA :
DC current in PLAY mode unless otherwise noted.
Value in ( ) is DC current in STOP mode.

7. OTHERS:
- ● ⊘ or ⊘ : Adjusting point.
- ● ◀ : Measurement point.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. SCH – □ ON THE SCHEMATIC DIAGRAM:
- SCH–□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

9. SWITCHES (Underline indicates switch position):

MDRS ASSY
S101 : FUNCTION SWITCH

FLKB ASSY
S102 : REPEAT
S103 : DISPLAY
S104 : POWER STANDBY/ON

KEYB ASSY
S105 : SKIP REV (⏮)
S106 : PLAY (▶)
S107 : STEP•SCAN FWD (▶▶)
S108 : PAUSE (⏸)
S109 : LD (⏏ OPEN/CLOSE)
S110 : STEP•SCAN REV (◀◀)
S111 : SKIP FWD (⏭)
S112 : STOP (■)
S113 : CD (⏏ OPEN/CLOSE)
S114 : B] DISC SIDE
S115 : A]

LMSB ASSY
S101 : SW1
S102 : SW2
S103 : SW3

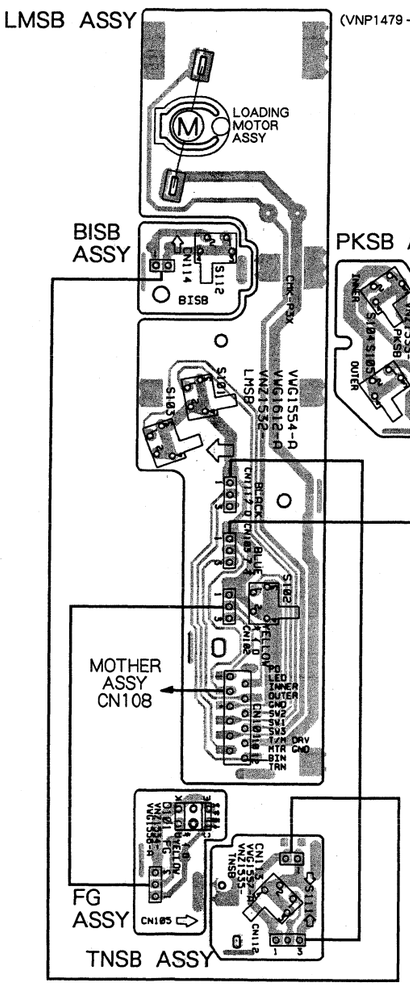
PKSB ASSY
S104 : OUTER
S105 : INNER

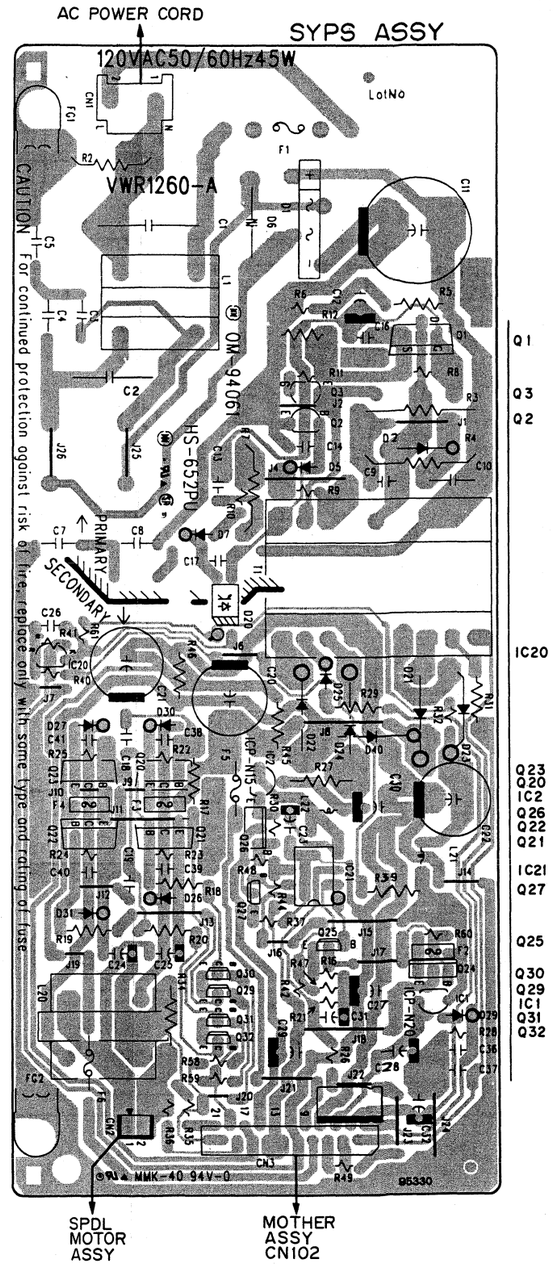
TNSB ASSY
S111 : TURN

BISB ASSY
S112 : B INSIDE

NOTE FOR PCB DIAGRAMS:
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

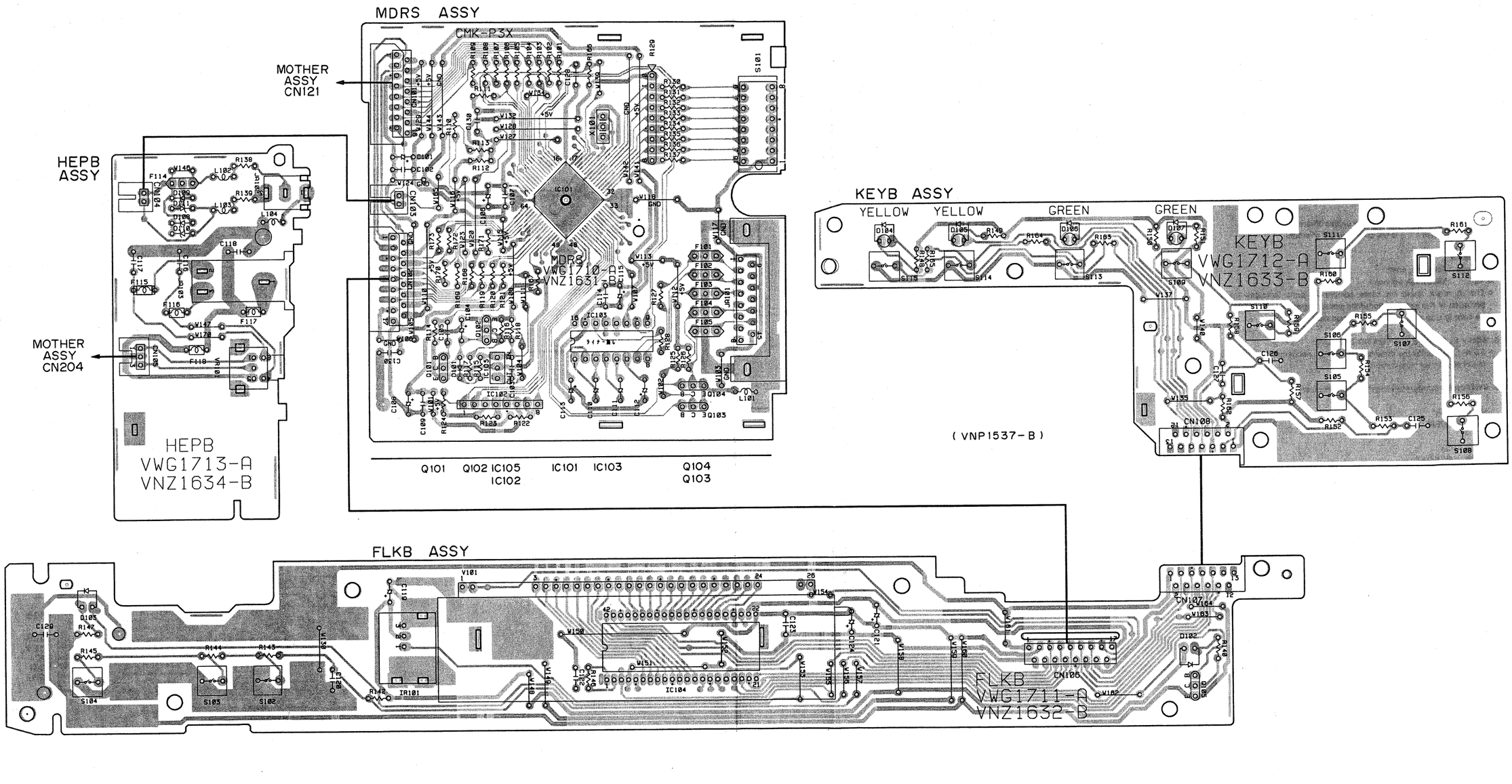
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator





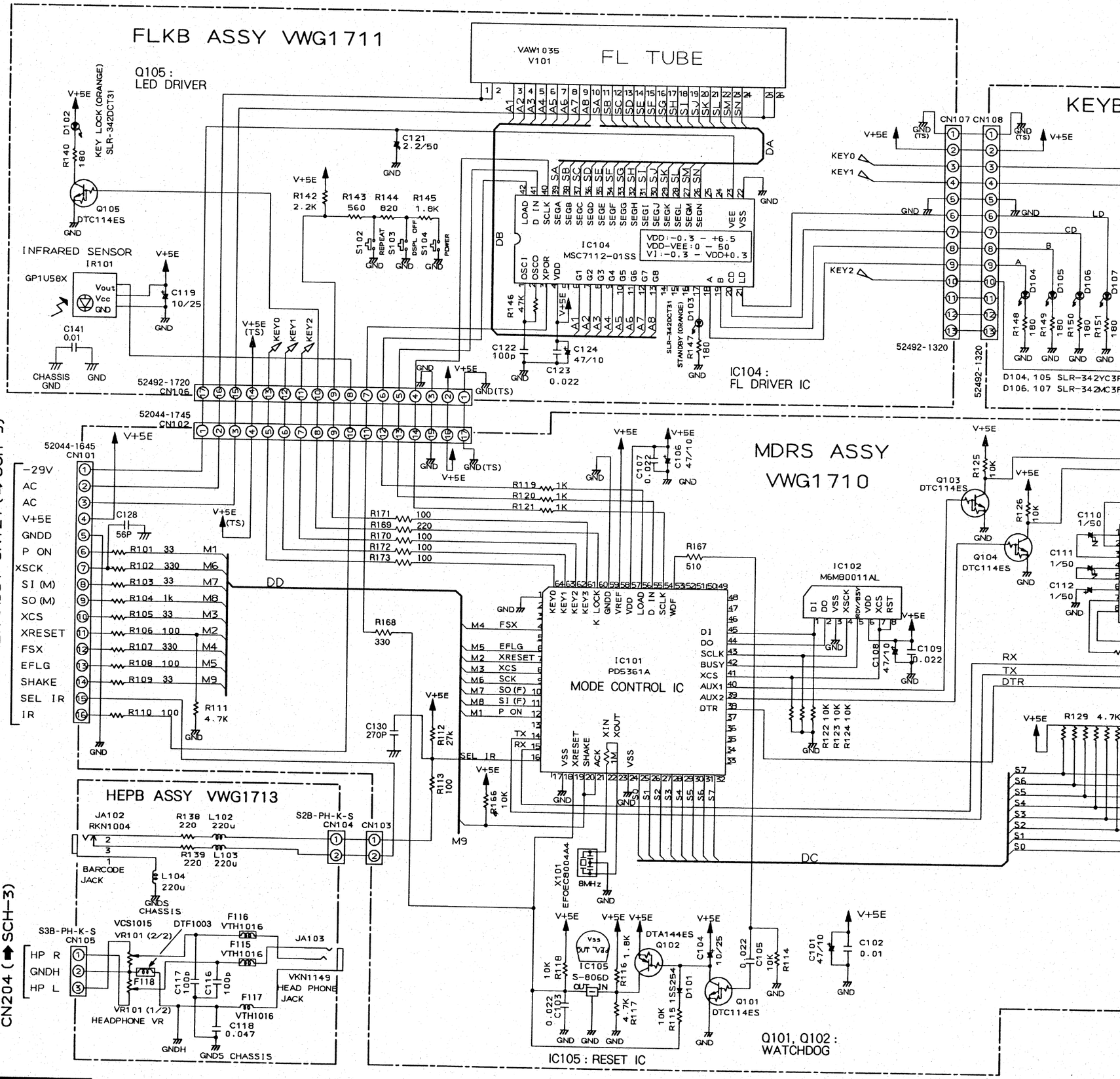
● This diagram is viewed from the mounted parts side.

3.2 MDRS, FLKB, KEYB AND HEPB ASSEMBLIES



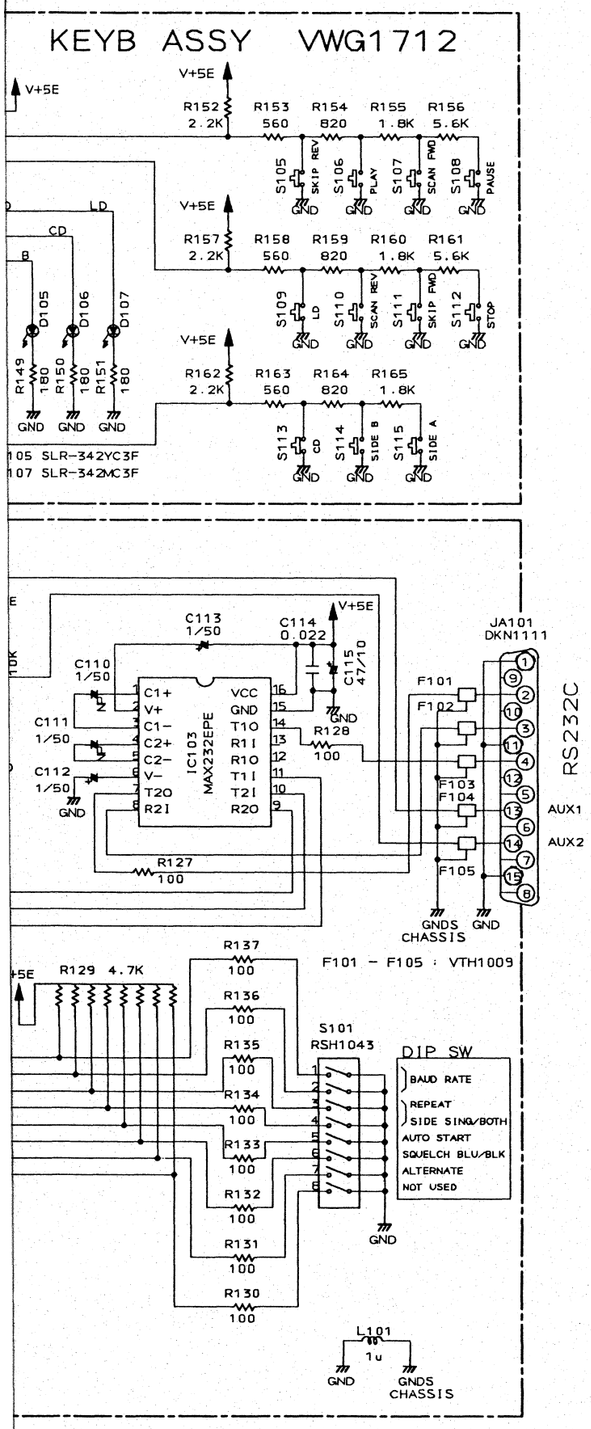
PCB - 2

- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.



SCH-2 MDRS ASSY, FLKB ASSY, KEYB ASSY, HEPB ASSY

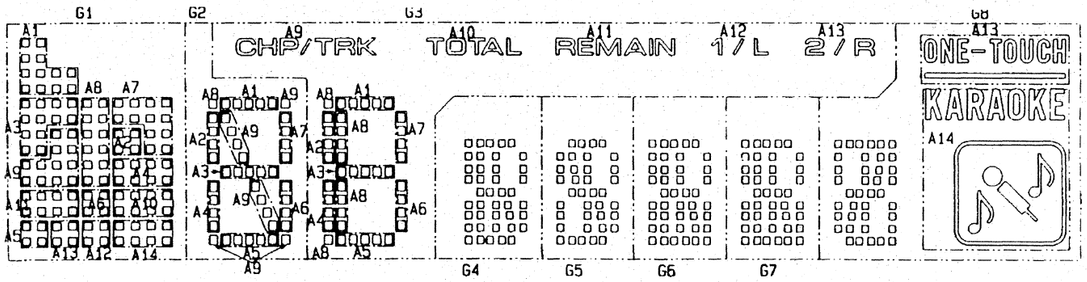
SCH – 2

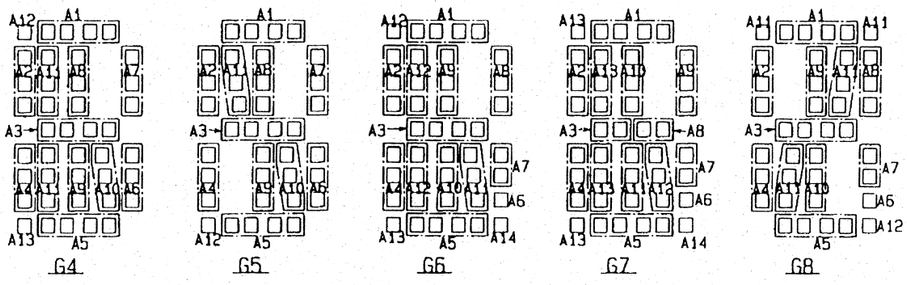


• FL INFORMATION

■ VAW1035 (FLKB ASSY : V101)

FL TUBE





ANODE GRID ASSIGNMENT & PIN ASSIGNMENT

	G1	G2	G3	G4	G5	G6	G7	G8
P1	A1	A1	A1	A1	A1	A1	A1	A1
P2	A2	A2	A2	A2	A2	A2	A2	A2
P3	A3	A3	A3	A3	A3	A3	A3	A3
P4	A4	A4	A4	A4	A4	A4	A4	A4
P5	A5	A5	A5	A5	A5	A5	A5	A5
P6	A6	A6	A6	A6	A6	A6	A6	A6
P7	A7	A7	A7	A7	A7	A7	A7	A7
P8	A8	A8	A8	A8	A8	A8	A8	A8
P9	A9	A9	CHP/TRK	A9	A9	A9	A9	A9
P10	A10		TOTAL	A10	A10	A10	A10	A10
P11	A11		REMAIN	A11	A11	A11	A11	A11
P12	A12		1/L	A12	A12	A12	A12	A12
P13	A13		2/R	A13		A13	A13	ONE-TOUCH
P14	A14					A14	A14	KARAOKE

PIN ASSIGNMENT

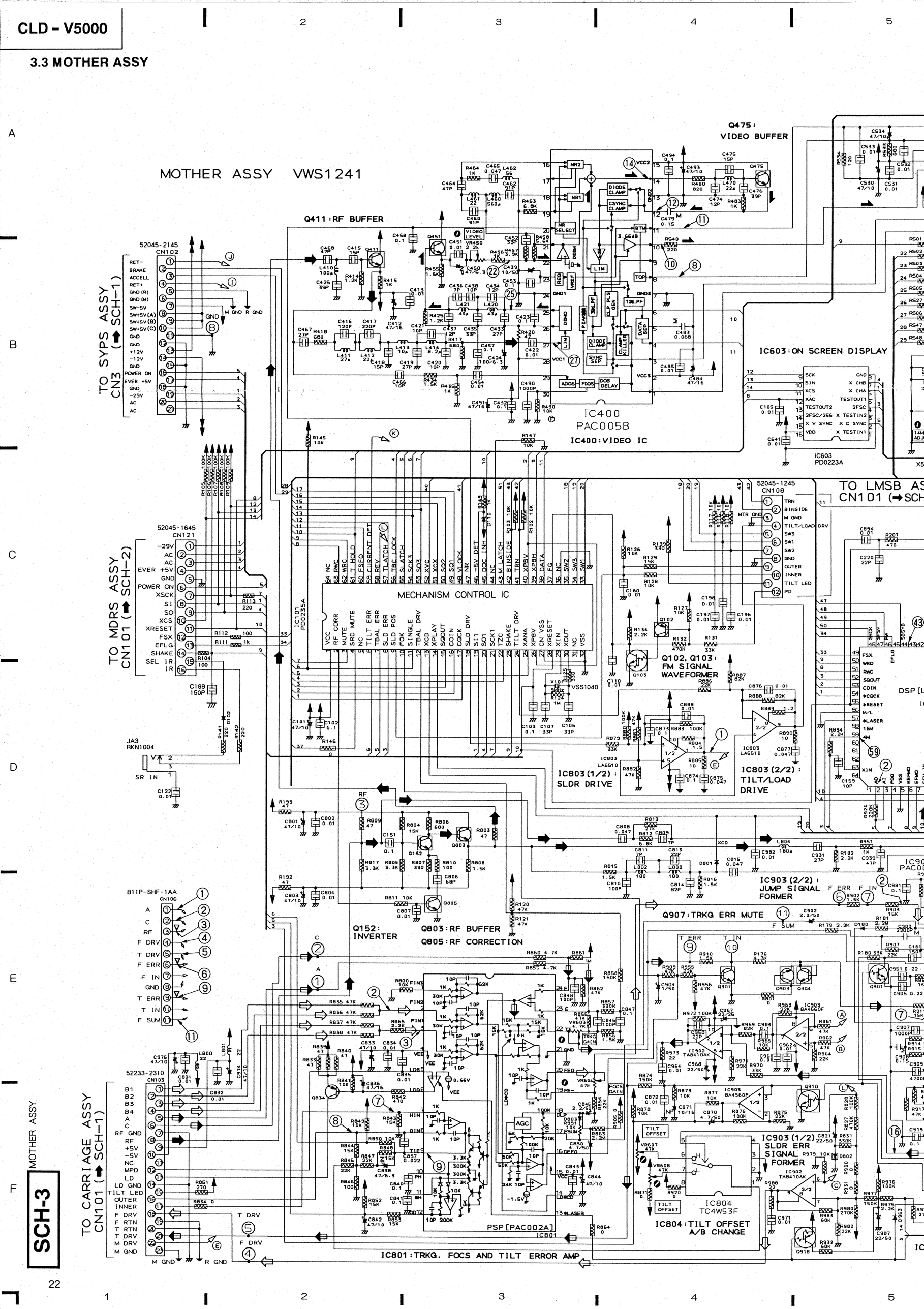
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Assignment	F	F	NP	NL	NL	NL	NL	G1	G2	G3	G4	G5	G6	G7	G8	P1	P2

Pin No.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Assignment	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	NL	NL	NP	F	F

F:Filament G1~G8:Grid P1~P14:Anode NP:No pin NL:No Lead

MDRS ASSY, FLKB ASSY,
KEYB ASSY, HEPB ASSY **SCH-2**

3.3 MOTHER ASSY



➡: RF SIGNAL ROUTE
➡: VIDEO SIGNAL ROUTE
⇨: FOCUS SERVO LOOP LINE
⇨: TRACKING SERVO LOOP LINE
⇨: AUDIO SIGNAL ROUTE
(D)⇨: AUDIO SIGNAL ROUTE (DIGITAL)
(A)⇨: AUDIO SIGNAL ROUTE (ANALOG)

SCH – 3

IC500 : DIGITAL VIDEO PROCESSOR

PD0192A

IC501 TC7S04F

IC206 : +8V REGULATOR
IC206 NJM78L08A

IC207 : –8V REGULATOR
IC207 NJM79L08A

JA13 VKB1068

TO GYCB ASSY CN102 (➡ SCH-4)

TO GYCB ASSY CN101 (➡ SCH-4)

BTFN6S-3SB7

BTFN12S-3SB7

X550 : VSS1073 (14.318MHz)

Q206, Q207 : AUDIO MUTE

Q204, Q205 : AUDIO MUTE

TO HEPB ASSY CN105 (➡ SCH-2)

IC202 : LOW PASS FILTER

X201 : 16MHz

IC201 : D/A CONVERTER
PD20268(L)

IC802 DSP [LC78681KE]

IC904 BA10393F

Q201, Q202, Q208 : DIG/ANA SWITCH

Q917 : LIMITTER

Q908 : GAIN CONTROL

IC905 BA4560F

IC901 PAC003A

IC902 (2/2) : FOCUS DRIVE

IC901 : SERVO CONTROL IC

IC351 : FM AUDIO DECODER

2SC3802K	: Q152
2PB709A	: Q102, Q916
2PD601A	: Q201, Q202, Q451, Q475, Q805, Q840, Q903, Q904, Q907, Q908, Q915, Q917
2SC2412K	: Q411, Q803
UN2112	: Q208–Q212, Q918
UN2212	: Q103, Q206, Q207, Q901, Q910
2SD2144S	: Q204, Q205
2SA854S	: Q834
KV1851	: D201
11EQS06	: D202
1SS254	: D102, D180, D203–D206, D801, D901, D902, D905, D963
MTZ5.1B	: D110
1SS355	: D802

MOTHER ASSY **SCH-3**

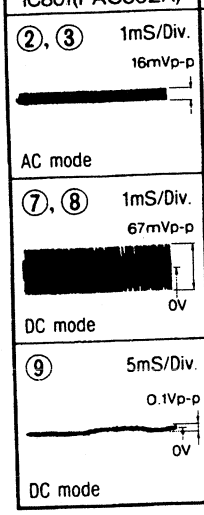
WAVEFORMS AND VOLTAGE

MOTHER ASSY

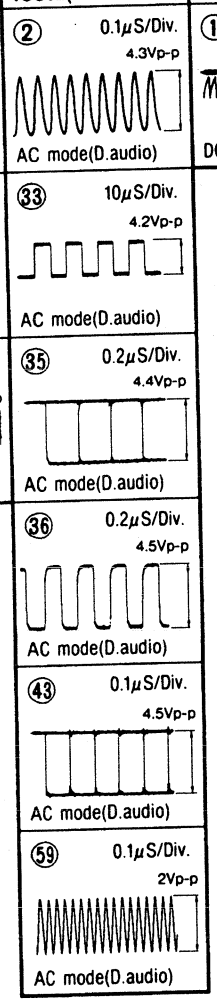
Note : (No.) in the table correspond to the pin number.

Measurement condition : In case when (D. audio) is written, at time when disc that has digital audio recording is played.

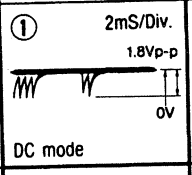
IC801(PAC002A)



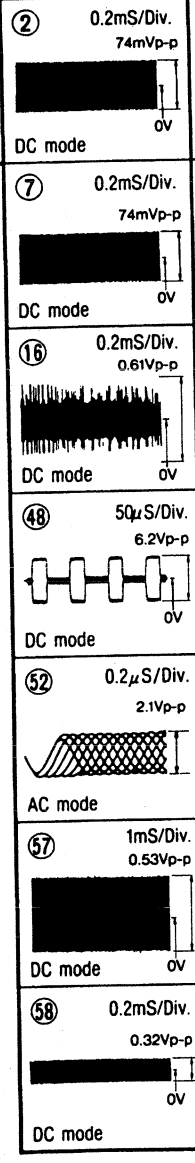
IC802(LC78681KE)



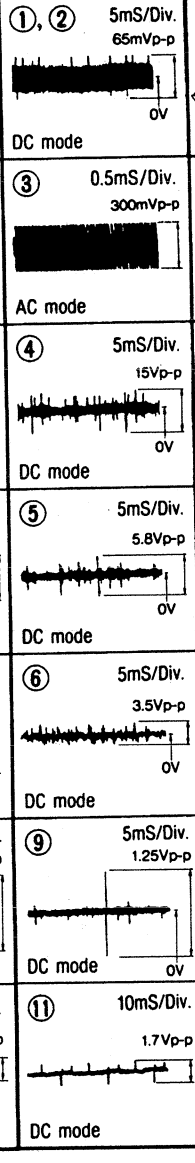
IC803(LA6510)



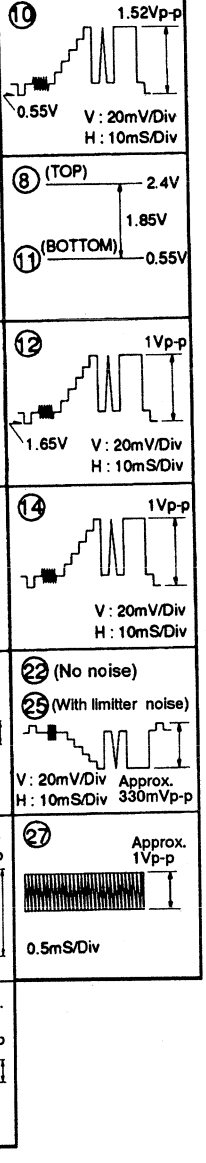
IC901(PAC003A)



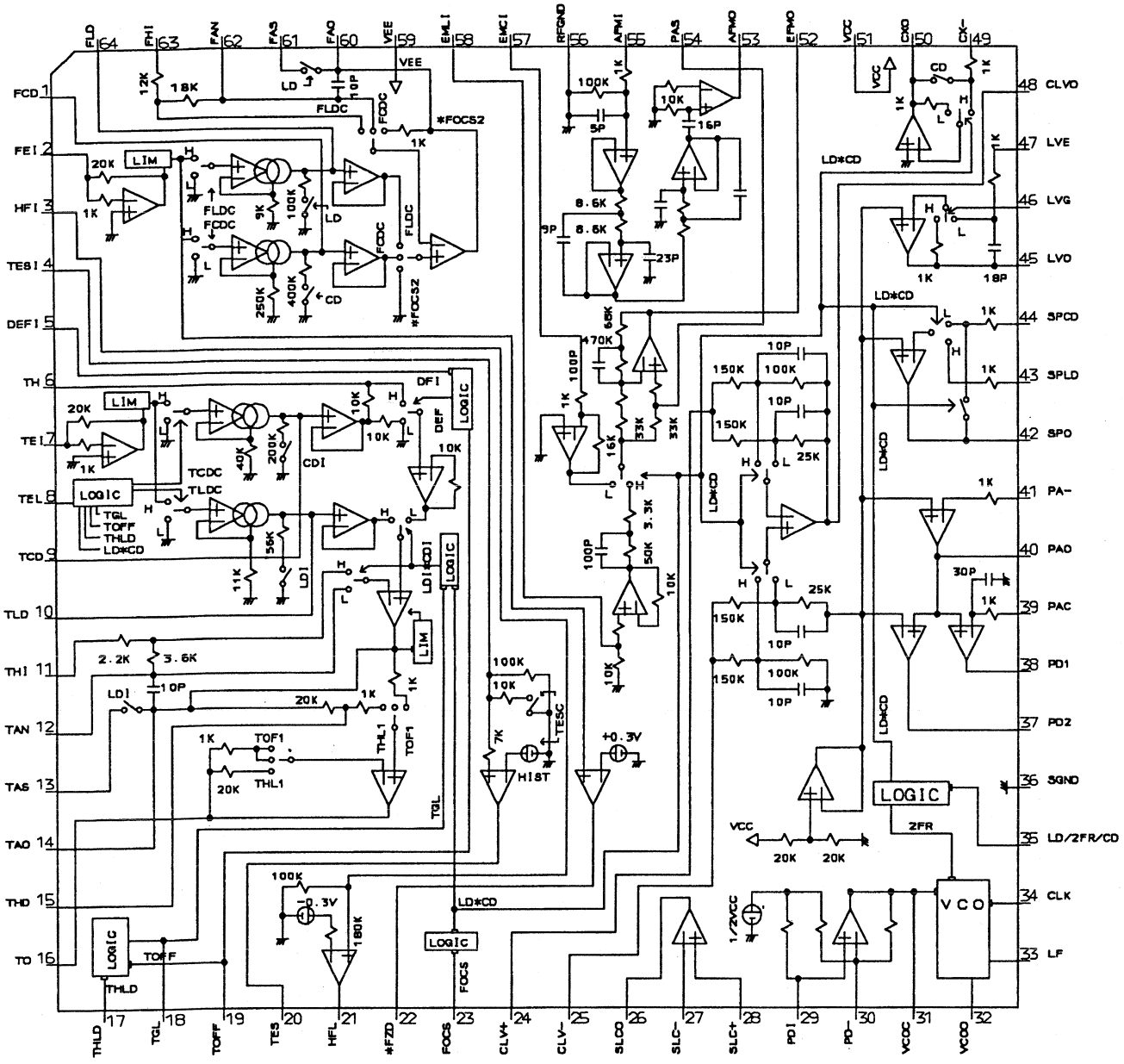
CN106



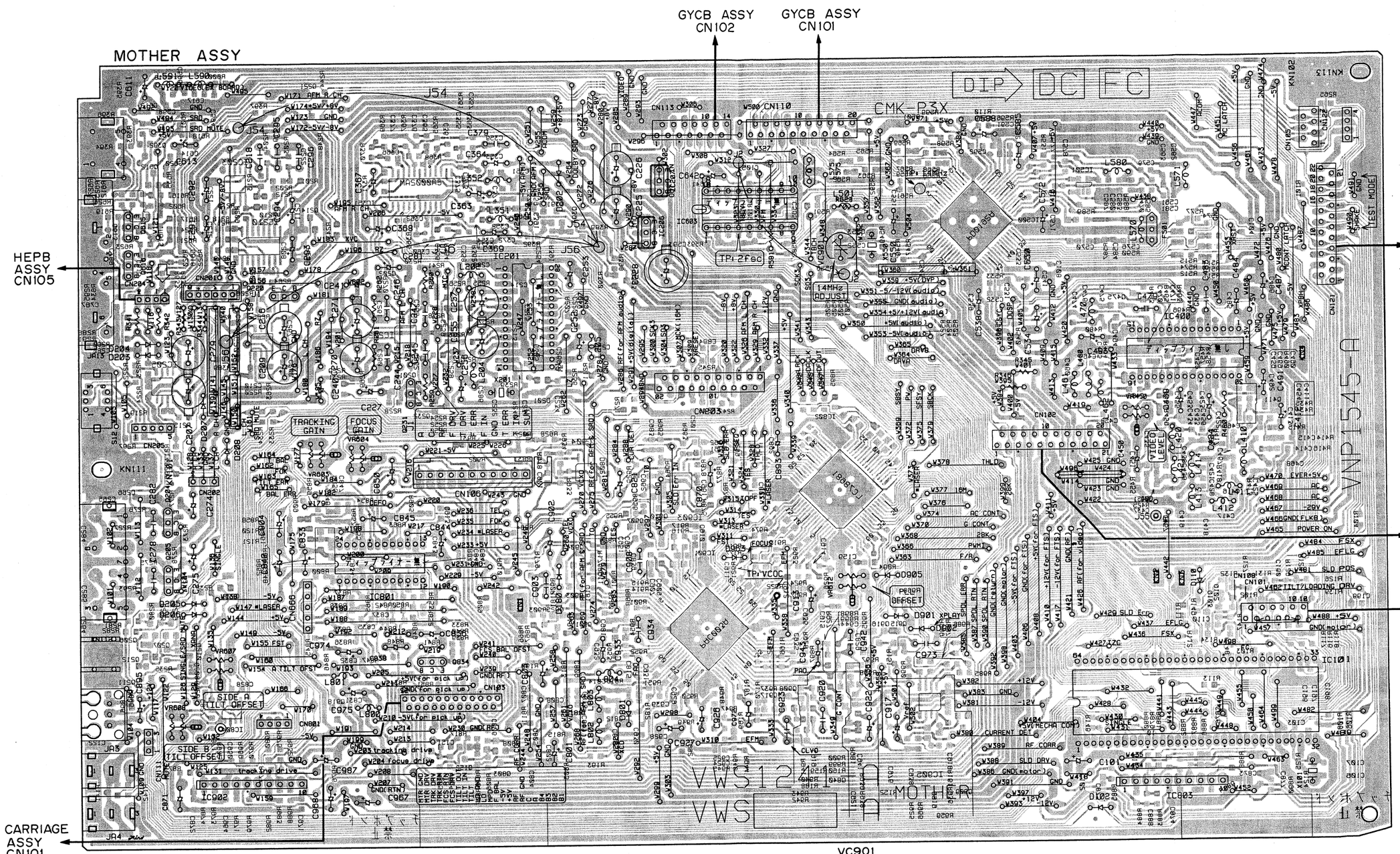
IC400 (PAC005B)



- **The inside block diagram of IC901 (PAC003A)**



PCB – 3



- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

3.4 GYCB ASSY

GYCB ASSY (VWV1397)

(Y) : Y Signal Route
: C Signal Route
: Video Signal Route

SCH - 4

IC101 :
3 LINE DIGITAL
COMB FILTER

IC101
CXD2023Q

IC102 :
Y-SIGNAL NR

IC102
TA7302P

Q101,Q102 :
Y-SIGNAL BUFFER

Q103,Q104 :
C-SIGNAL BUFFER

Q111 : NR SIGNAL
MIXING

IC106 (1/2) :
Y-SIGNAL BUFFER

IC106
MC14577CP

Q115 : C-SIGNAL
BUFFER

IC106 (2/2) :
VIDEO AMP
Y/C MIXING

Q172 :
VIDEO BUFFER

2PD601A Q101, Q103
2PB709A Q102, Q104, Q111
2SC1740S Q172, Q115

BTFN12P-3RD7
CN101

TO
MOTHER
ASSY
CN110
(➡SCH-3)

BTFN6P-3RD7
CN102

TO
MOTHER
ASSY
CN113
(➡SCH-3)

JA103
VKN1072-

JA101
DKB1028

WAVEFORMS AND VOLTAGE

GYCB ASSY

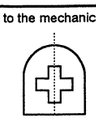
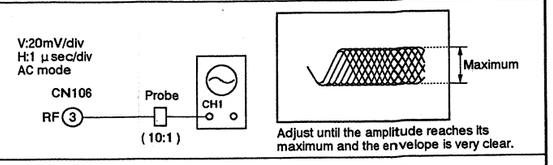
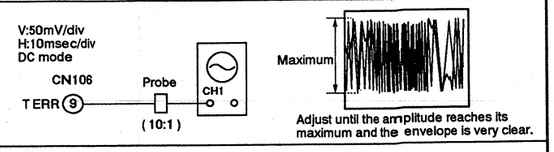
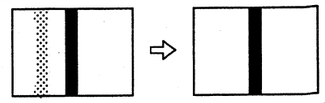
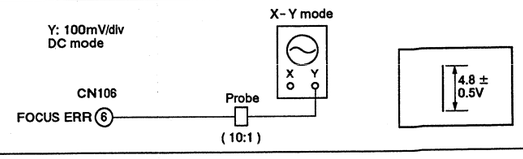
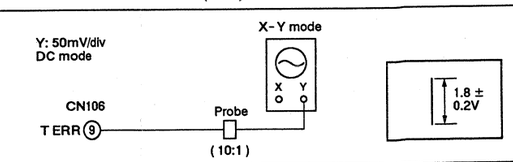
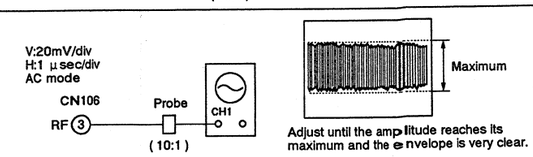
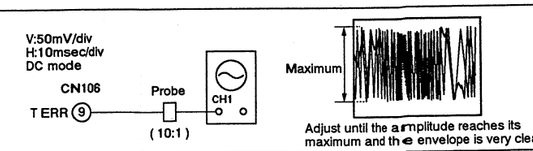
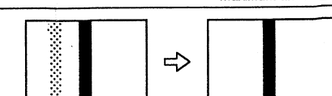
Note : (No.) in the table correspond to the pin number.

Measurement condition : Where (Color bars) is written, at time when color bar screen of disc is being played. Where (Still) is written, at time of still.

IC101(CXD2023Q)	
(31)	10μS/Div. 2.1Vp-p, AC mode[Color bars]
(39)	5mS/Div. 0.7Vp-p, AC mode[Color bars]

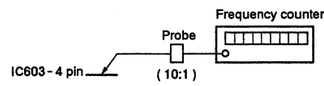
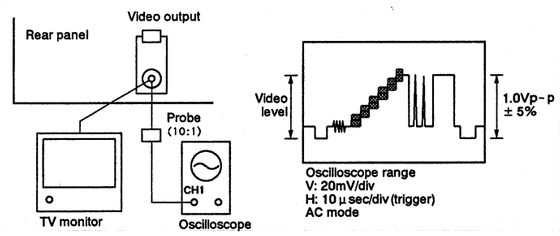
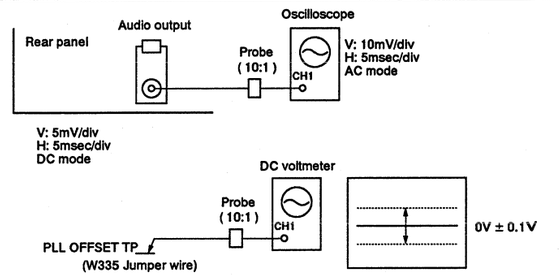
7.5 ADJUSTMENT METHOD

• Mechanical adjustment

Step	Adjustment name	Adjustment point	Measuring point and measuring mode	Player condition	Adjustment procedure	Waveform and connection diagram
1	Tilt offset adjustment	MOTHER assy VR607, VR608 (TILT OFFSET)		Test mode Disc not installed	Check the positions of VR607 and VR608 to the mechanical center with eyes. If there positions are shifted, set to the center.	
2	Tangential direction angle adjustment (side A)	Carriage assy TAN adjustment screw (side A)	CN106-3 (RF)	CD test disc outer track play (See position for TAN adjustment screw) TRKG-ON, TILT-ON	Adjust so that the amplitude of the RF waveform reaches its maximum and the envelope is very clear. Apply the lock-tight after the adjustment.	
3	Spindle motor centering adjustment (side A)	Mechanism assy Centering adjustment screw (side A)	CN106-9 (TRKG error)	CD test disc inner track play (CD inside position in the program area) TRKG-OFF, TILT-ON	Adjust so that the amplitude of the tracking error waveform reaches its maximum and the envelope is very clear. Apply the lock-tight after the adjustment.	
4	Crosstalk check and tilt offset re-adjustment (side A)	MOTHER assy VR607 (side A) (TILT OFFSET)	TV monitor Crosstalk monitor check	LD test disc #115 still TRKG-ON, TILT-ON	If the crosstalk is pronounced, adjust VR607 until the crosstalk is not noticeable.	
5	Focus servo loop gain adjustment	MOTHER assy VR604 (FOCUS GAIN)	CN106-6 (FOCUS error) CH2 "X-Y mode"	LD test disc (PLAY STANDBY) Short CN106-7 (F IN) and 8 (GND), then press the PLAY key (disc not turn)	Adjust VR604 until the waveform level is 4.8 ± 0.5V.	
6	Tracking servo loop gain adjustment	MOTHER assy VR603 (TRACKING GAIN)	CN106-9 (TRKG error) CH2 "X-Y mode"	LD test disc #115 still TRKG-ON, TILT-ON	Adjust VR603 until the waveform level is 1.8 ± 0.2V.	
7	Tangential direction angle adjustment (side B)	Carriage assy TAN adjustment screw (side B)	CN106-3 (RF)	LD test disc #115 still TRKG-ON, TILT-ON	Adjust so that the amplitude of the RF waveform reaches its maximum and the envelope is very clear. Apply the lock-tight after the adjustment.	
8	Spindle motor centering adjustment (side B)	Mechanism assy Centering adjustment screw (side B)	CN106-9 (TRKG error)	LD test disc #115 still TRKG-OFF, TILT-ON	Loosen a black screw beside the centering adjustment screw (side B). Adjust so that the amplitude of the tracking error waveform reaches its maximum and the envelope is very clear. After adjustment is complete, tighten the black screw and apply the lock-tight.	
9	Crosstalk check and tilt offset re-adjustment (side B)	MOTHER assy VR608 (side B) (TILT OFFSET)	TV monitor Crosstalk monitor check	LD test disc #115 still TRKG-ON, TILT-ON	If the crosstalk is pronounced, adjust VR608 until the crosstalk is not noticeable.	

(NOTE) • This adjustment can be thought to be about the same adjustment as on the manufacturing line with differing adjustment tools. Follow the adjustment procedures even for checking the adjustments.
• When you open the tray in test mode, the screen displays goes out. To display the screen again, press the DISPLAY key.
• The mechanical adjustment can be all carried out with disc tray mounted.

• Electrical adjustment

Step	Adjustment name	Adjustment point	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
1	Master clock adjustment	MOTHER assy VC901	IC603-4 (2 fsc)	Power ON	Adjust VC901 so that frequency with power on is 7.159090MHz ± 20Hz. Connect video output terminal and oscilloscope. (Video output terminal is terminated with 75 Ω)	
2	Output video level adjustment	MOTHER assy VR450 (VIDEO LEVEL)	Video output terminal	Normal mode LD test disc #19,900 still	Adjust VR450 so that level from video signal sync tip to 100% white becomes 1Vp-p ± 5%. (It's possible to terminate video output terminal with 75 Ω by connecting TV monitor)	
3	PLL OFFSET adjustment	MOTHER assy VR612 (PLL OFFSET)	W335 (PLL OFFSET TP)	Test mode CD test disc play TRKG servo OFF/ON	Note: Before adjusting remove disc tray. With the tracking servo off, playback digital audio and roughly adjust VR612 so that the sound is audible. Connect W335 and a DC voltmeter and while playing back digital audio, switch the tracking servo on and off and adjust VR612 so that the difference between the DC voltage when the tracking servo is on and when it is off is no greater than 0 ± 0.1V.	

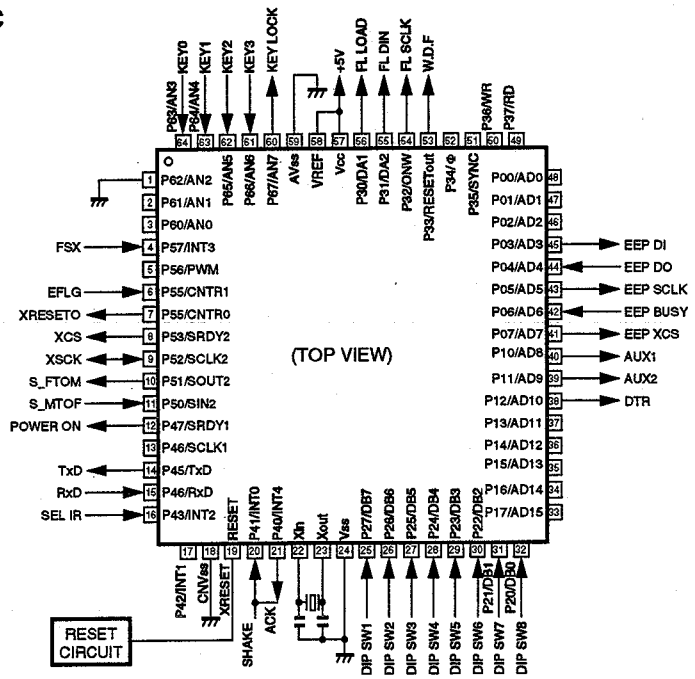
8. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

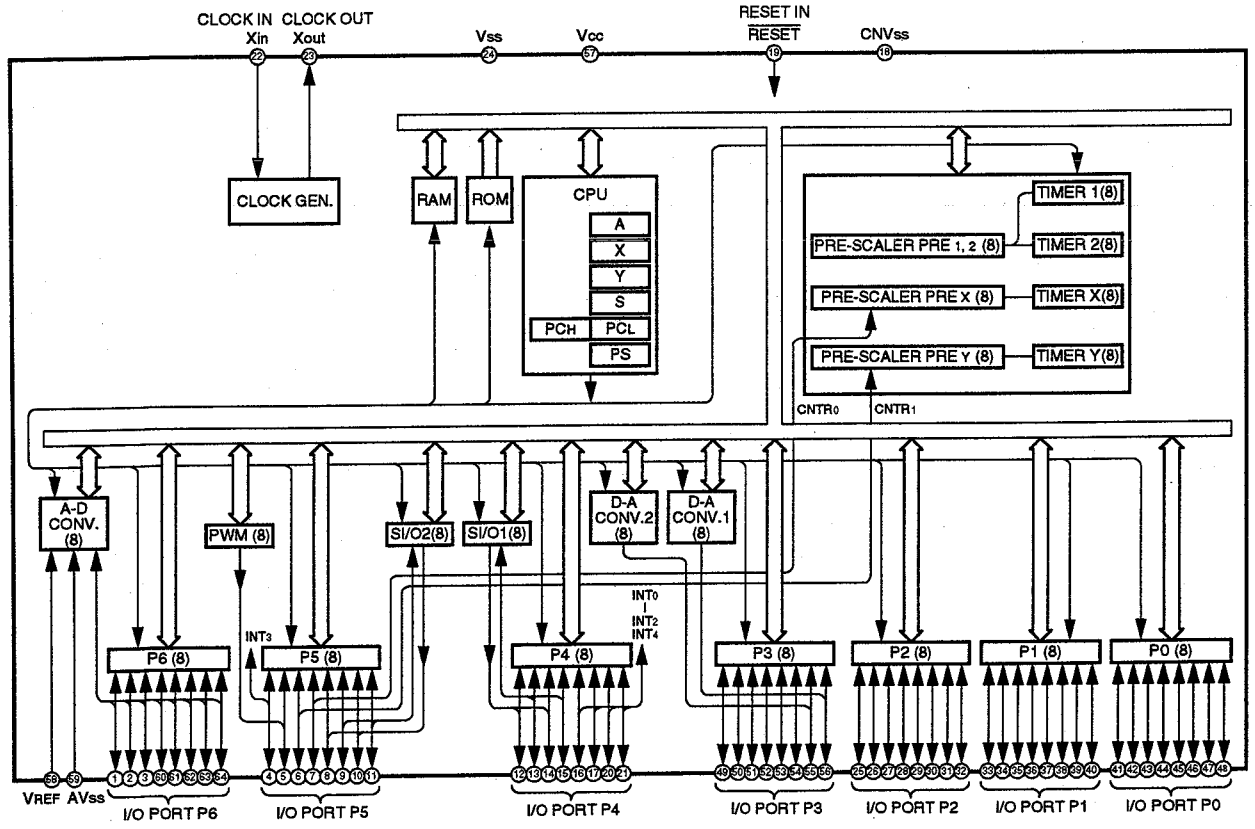
■PD5361A (MDRS ASSY : IC101)

• MODE CONTROL IC

• Pin Assignment



• Block Diagram



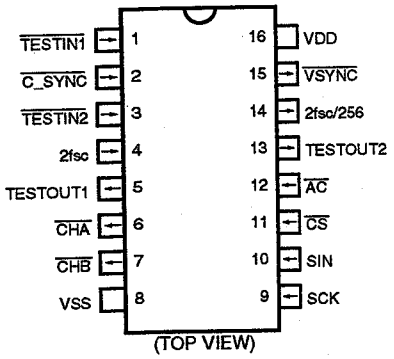
• Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1		I	Connect to GND.	33	N.C.	O	
2	N.C.	O		34	N.C.	O	
3	N.C.	O		35	N.C.	O	
4	FSX	I	EFM decoder 7.35kHz frame sync signal.	36	N.C.	O	
5	N.C.	O		37	N.C.	O	
6	EFLG	I	EFM decoder error correction status signal.	38	DTR	O	
7	XRESETO	O	Mother board reset output.	39	AUX2	O	Always "L" output.
8	XCS	O	Character generator (PD0223A) chip select output.	40	AUX1	O	Play, search and turn : "H" output, others : "L" output.
9	XSCK	I/O	Serial communication clock.	41	EEP XCS	O	EEPROM control signal : chip select.
10	S_FTOM	O	Serial communication data output.	42	EEP BUSY	I	EEPROM control signal : busy.
11	S_MTOF	I	Serial communication data input.	43	EEP SCLK	O	EEPROM control signal : clock.
12	POWER ON	O	Mother board power feed switching output.	44	EEP DO	I	EEPROM control signal : data (EEPROM to CPU)
13	N.C.	O		45	EEP DI	O	EEPROM control signal : data (CPU to EEPROM)
14	TxD	O	RS-232C output.	46	N.C.	O	
15	RxD	I	RS-232C input.	47	N.C.	O	
16	SEL IR	I	Remote control/SR/Barcode input	48	N.C.	O	
17	N.C.	O		49	N.C.	O	
18	CNVss	—	Ground.	50	N.C.	O	
19	XRESET	I	CPU reset.	51	N.C.	O	
20	SHAKE	I	Mechanism controller serial communication request.	52	N.C.	O	
21	ACK	O	Response to mechanism controller serial communication request.	53	W. D. F	O	Watchdog timer pulse.
22	Xin	I	Main system clock oscillation (8MHz).	54	FL SCLK	O	FL driver (MSC7112-01) control signal : clock.
23	Xout	O	Main system clock oscillation (8MHz).	55	FL DIN	O	FL driver (MSC7112-01) control signal : data.
24	Vss	—	Ground.	56	FL LOAD	O	FL driver (MSC7112-01) control signal : latch.
25	DIP SW 1	I	Refer to "5.2 FUNCTION SWITCHES".	57	Vcc	—	+5V.
26	DIP SW 2			58	Vref	—	Reference power input for A/D input +5V.
27	DIP SW 3			59	AVss	—	Power input for A/D input GND.
28	DIP SW 4			60	KEY LOCK	O	Key lock indicator.
29	DIP SW 5			61	KEY3	I	Main key input (A/D input) : REPEAT, DISPLAY, POWER.
30	DIP SW 6			62	KEY2	I	Main key input (A/D input) : CD ⏏, B, A.
31	DIP SW 7			63	KEY1	I	Main key input (A/D input) : LD ⏏, ◀◀, ▶▶|, ■.
32	DIP SW 8			64	KEY0	I	Main key input (A/D input) : |◀◀, ▶, ▶▶, ▮▮.

■PD0223A (MOTHER ASSY : IC603)

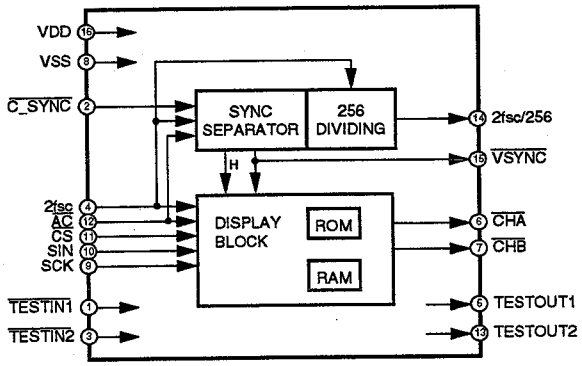
• ON SCREEN DISPLAY IC

• Pin Assignment



←: Indicates the direction of the input/output.

• Block Diagram



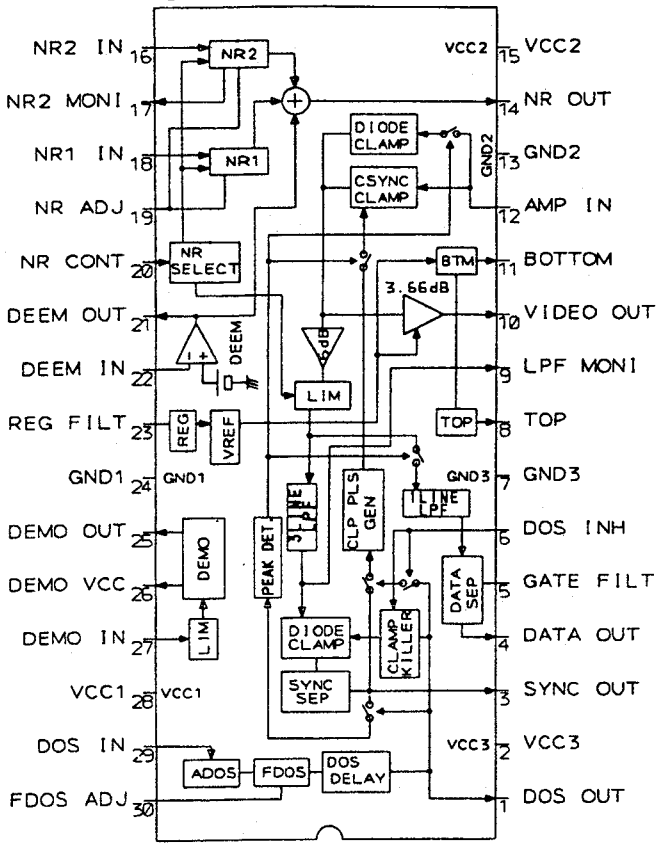
• Pin Function

Pin No.	Symbol	Name	Description
1	$\overline{\text{TESTIN1}}$	Test input 1	IC test input pin.
2	$\overline{\text{C SYNC}}$	Composite sync input	This pin inputs a composite sync signal in negative logic.
3	$\overline{\text{TESTIN2}}$	Test input 2	IC test input pin.
4	2fSC	Master clock	This pin inputs a double clock of a color subcarrier frequency.
5	TESTOUT1	Test output 1	IC test output pin.
6	$\overline{\text{CHA}}$	Channel A output	This pin outputs a character timing pulse in negative logic.
7	$\overline{\text{CHB}}$	Channel B output	The logical OR of character timing and blanking timing is output in negative logic when the blanking function is set to ON.
8	VSS	GND pin	This pin is connected to ground (GND).
9	SCK	Serial clock input	This pin supplies a clock during serial communication. The SIN value is read at the rising edge. This pin has an internal pull-up resistor.
10	SIN	Serial data input	This pin supplies data during serial communication. It has an internal pull-up resistor.
11	$\overline{\text{CS}}$	Chip select input	This pin is set low during serial communication. It has an internal pull-up resistor.
12	$\overline{\text{AC}}$	Auto clear input	This pin initializes an IC when it is set low. The contents of a RAM in which character codes are stored do not change. This pin has an internal pull-up resistor.
13	TESTOUT2	Test output 2	IC test output pin.
14	2fSC/256	256-dividing output of master clock	This outputs a clock obtained when the master clock (2fSC) is frequency-divided into 1/256.
15	$\overline{\text{VSYNC}}$	V sync output	This pin outputs a signal, obtained by separating a V sync signal from the signal at pin 2 (C SYNC), in negative logic.
16	VDD	Power pin	This pin is connected to +5V.

■ PAC005B (MOTHER ASSY : IC400)

•VIDEO IC

• Block Diagram



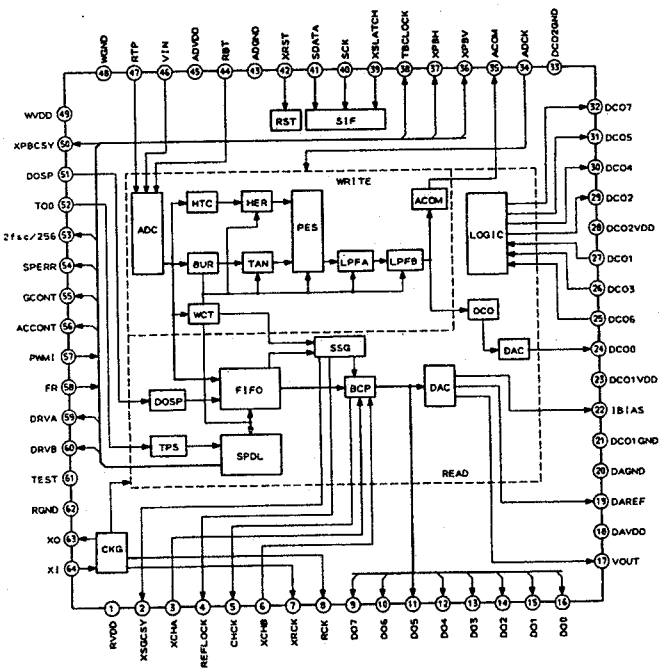
• Pin Function

No.	Pin Name	Function
1	DOS OUT	Drop out pulse output.
2	VCC3	VCC for SYNC SEP section.
3	SYNC OUT	Composite sync output.
4	DATA OUT	Data pulse output.
5	GATE FILT	Connect a capacitor for Date - Gate.
6	DOS INH	Clamp pulse and clamp killer control.
7	GND3	GND for SYNC SEP section.
8	TOP	Reference DC (TOP) for A/D.
9	LPF MONI	Monitor the LPF for SYNC SEP.
10	VIDEO OUT	Signal output for A/D.
11	BOTTOM	Reference DC (BOTTOM) for A/D.
12	AMP IN	Sync chip clamp input.
13	GND2	GND for VIDEO.
14	NR OUT	Noise reduction output.
15	VCC2	VCC for VIDEO section.
16	NR2 IN	Signal input (2) for noise reduction.
17	NR2 MONI	Limitter output for noise reduction.
18	NR1 IN	Signal input (1) for noise reduction.
19	NR ADJ	Limitter level adjusting pin for noise reduction.
20	NR CONT	Noise reduction (1, 2) select and limitter control.
21	DEEM OUT	De-emphasis output.
22	DEEM IN	De-emphasis input.
23	REG FILT	Connect a capacitor for regulator.
24	GND1	GND for RF section.
25	DEMO OUT	Demodulation output of RF signal.
26	DEMO VCC	VCC for FM demodulation output.
27	DEMO IN	RF input for FM demodulation.
28	VCC1	VCC for RF section.
29	DOS IN	RF input for DOS.
30	FDOS ADJ	FDOS sensitivity adjustment.

■ PD0192A (MOTHER ASSY : IC500)

• DIGITAL VIDEO PROCESSOR

• Block Diagram



• Pin Function

No.	Pin Name	Function	
1	RVDD	Power pin for reference system. Connect to +5V.	
2	XSGCSY	Reference composite sync. is output at negative logic. Delay can be controlled by serial command.	
3	WFM	MEMSYS : 1	Field monitor output for write system. Outputs "H" when in odd field.
	XCHA	MEMSYS : 0	Character input pin. Inputs "L" during character insertion.
4	XTBCH	MEMSYS : 1	TBC H sync. output. Outputs time base-corrected (TBC) H sync. at negative logic.
	REFLOCK	MEMSYS : 0	SSG phase detection signal output. Outputs "H" when phase difference of H, V sync. between Playbacksystem (after TBC) and SSG system is small enough.
5	XTBCV	MEMSYS : 1	TBC V sync. output. Outputs time base-corrected V sync. at negative logic.
	GHCK	MEMSYS : 0	Clock output for character generator. Output 2fsc.
6	FCH	MEMSYS : 1	Field change input. Switches field of SSG when "H".
	XCHB	MEMSYS : 0	Character frame input pin. Inputs "L" when character frame is inserted.
7	XRCK	Reference CLK is reversed and output.	
8	RCK	Reference CLK output.	
9	DO7	Data output 7	Outputs TBC (time base-corrected) video signal to support memory. This setting performs by serial command. DO7 is MSB, DO0 is LSB.
10	DO6	Data output 6	
11	DO5	Data output 5	
12	DO4	Data output 4	
13	DO3	Data output 3	
14	DO2	Data output 2	
15	DO1	Data output 1	
16	DO0	Data output 0	
17	VOUT	DAC output of TBC video signal.	
18	DAVDD	Power pin for D/A converter. Connect to +5V.	
19	DAREF	D/A converter refernce for video. Normally connect to DAGND via 0.1 μF of laminated ceremic capacitor.	
20	DAGND	Ground pin for D/A converter. Connect to GND.	
21	DCO1GND	Ground pin for DCO. Connect to GND.	
22	IBIAS	Current setting pin of bias circuit. Normally connect to DAGND via external resistor (10k Ω).	
23	DCO1VDD	Power pin for DCO. Connect to +5V.	

No.	Pin Name	Function
24	DCO0	DCO output pin. ADCK is generated by multiplying this signal by 4.
25	DCO6	Waveform shaping input pin 6. Inputs signal of DCO5 output signal that is delayed 35 ns (self-biased).
26	DCO3	Waveform shaping input pin 3. Inputs signal of DCO2 output signal that is delayed 70 ns (self-biased).
27	DCO1	Waveform shaping input pin 1. Inputs DCO0 signal via band-pass filter of fsc (self-biased).
28	DCO2VDD	Power supply pin for multiplied by 4 section. Connect to +5V.
29	DCO2	Waveform shaping output pin 2. Outputs signal of waveform of DCO1 signal that is shaped.
30	DCO4	Waveform shaping output pin 4. Outputs signal of waveform of DCO3 signal that is shaped.
31	DCO5	Waveform shaping output pin 5. Outputs signal multiplied by 2.
32	DCO7	Waveform shaping output pin 7. Outputs signal multiplied by 4.
33	DCO2GND	Ground pin for multiplied by 4 section. Connect to GND.
34	ADCK	CLK input pin for write system. Inputs signal of DCO7 output signal that is filtered through 4 fsc ceramic filter. (self-biased)
35	ACOM	Jitter correction signal output for analog audio. Used to cancel the jitter of analog audio.
36	XPBV	V sync. output for playback system. Outputs signal that has V sync. separated from pin 50 (XPBCSY) signal at negative logic.
37	XPBH	H sync. output for playback system. Outputs signal that has H sync. separated from pin 50 (XPBCSY) signal at negative logic.
38	TBCLOCK	PLL LOCK detection signal output. Outputs "H" when spindle servo loop and TBC servo loop are locked.
39	XSLATCH	Serial interface latch signal input. Generates timing to latch data that was input to serial interface. (latched at L, Schmitt trigger input)
40	SCK	Serial interface CLK input. CLK input for serial interface. SDATA value is read at rising edge. (Schmitt trigger input)
41	SDATA	Serial interface data input. Inputs data to serial interface. (Schmitt trigger input)
42	XRST	System reset input. Initializes internal registers of IC at negative logic. (Schmitt trigger input)
43	ADGND	Ground pin for A/D converter. Connect to GND.
44	RBT	A/D converter bottom reference input. Inputs bottom reference voltage of A/D converter.
45	ADVDD	Power supply pin for A/D converter. Connect to +5V.
46	VIN	A/D converter input. Inputs composite video signal.
47	RTP	A/D converter top reference input. Inputs top reference voltage of A/D converter.
48	WGND	Ground pin for write system. Connect to GND.
49	WVDD	Power pin for write system. Connect to +5V.
50	XPBCSY	Composite sync. input for playback system. Inputs composite sync. for playback system at negative logic. (Schmitt trigger input)
51	DOSP	Drop out pulse input. Inputs drop out detection pulse at positive logic. (Schmitt trigger input)
52	TO0	Tracking open pulse input. Inputs tracking open pulse at positive logic. (Schmitt trigger input)
53	XI/512	Master clock 512 division output. Outputs clock of master clock (4fsc) that is divided by 512.
54	SPERR	Spindle error PFD error output. Outputs result after performing PFD on PBH and RefH at tri-state.
55	GCONT	Spindle gain control output. Outputs PWM signal according to set value (GD0 – GD3), using serial instructions.
56	ACCNT	Accelerated control output. Outputs acceleration/deceleration signal by forced acceleration/deceleration and PBH sync. frequency detection at tri-state.
57	PWMI	Spindle error PWM input. Inputs signals that have voltage compared between spindle errors that passed through a loop filter and chopping waves. (Schmitt trigger input)
58	FR	Spindle error direction component input. Inputs signals that have voltage compared between spindle errors that passed through a loop filter and target voltage. (Schmitt trigger input)
59	DRVA	Transistor control signal output pin for spindle motor drive. This setting is performed by the interface corresponding to the brush motor and brushless motor.
60	DRVB	Transistor control signal output pin for spindle motor drive. This setting is performed by the interface corresponding to the brush motor and brushless motor.
61	TEST	Input pin for IC test. Fixed to "L".
62	RGND	Ground pin for reference system. Connect to GND.
63	XO	Oscillation output. Connect the X'tal (4 fsc) for oscillation.
64	XI	Oscillation input. Connect the X'tal (4 fsc) for oscillation.

■ PD0235A (MOTHER ASSY : IC101)

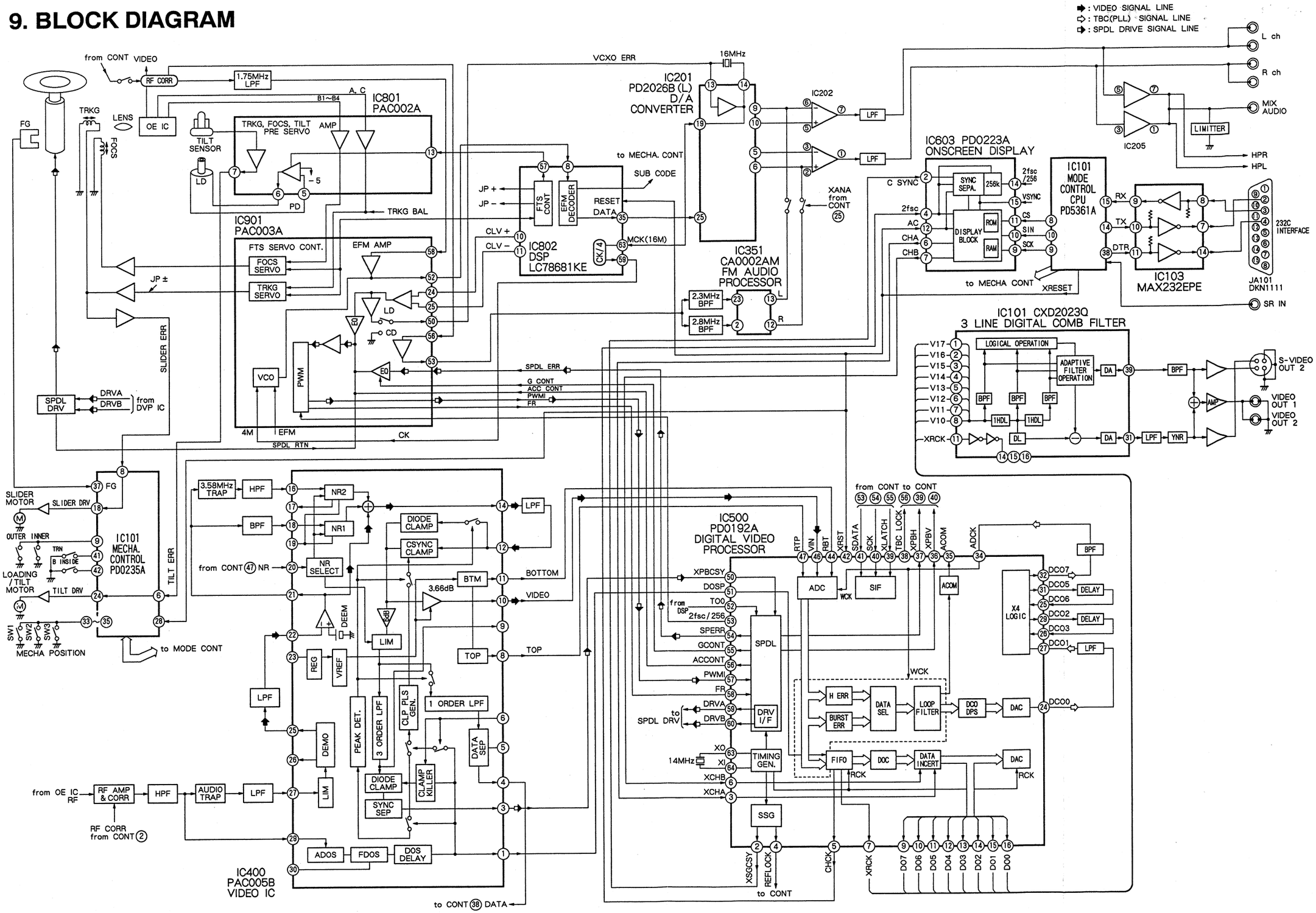
• MECHANISM CONTROL IC

• Pin Function

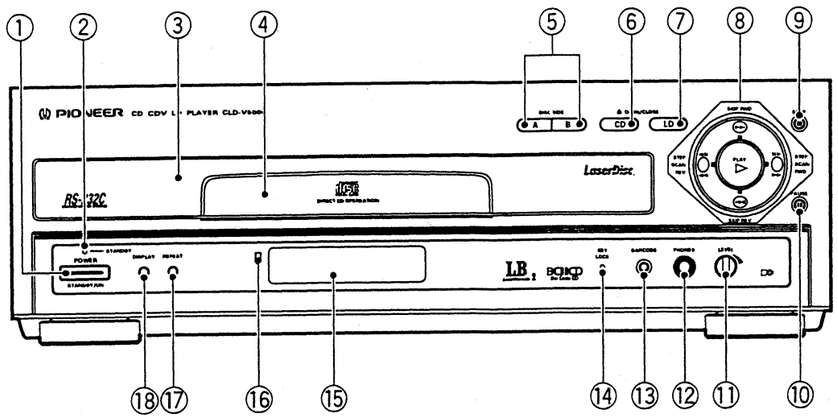
No.	Pin Name	I/O	Function
1	VCC	I	Power supply pin. Apply 5V ± 10%.
2	RFCORR	O	RF correction switch signal output. "H"=gain UP CD,CDV – A:Low, CAV inner ciircuit gain up, others are High.
3	MUTE	O	Audio mute control signal output of audio system. L : Release MUTE , H : MUTE
4	SRDMUTE	O	Mute control signal output for AC3. Release MUTE during playback.. L : Release MUTE, H : MUTE
5	TILT ON	O	(For debugging)Tilt operation information. H : during operation for checking tilt operation.
6	TILTERR	I A/D	This signal is A/D converted as the tilt servo control input. Control the tilt motor so that this signal becomes 2.5V.
7	TBALERR	I A/D	Tracking error balance signal input. This signal is A/D converted as the tracking offset control input.
8	SLDERR	I A/D	This signal is A/D converted as the slider servo control input. Control the tilt motor so that this signal becomes 2.5V.
9	SLDPOS	I A/D	Pickup position detection switch input. Detect the position by reading A/D input value which each switches are resistance divided.
10	XFOK	I	Focus servo lock signal input. L : Lock , H : Unlock Use for lock detection of focus servo.
11	SINGLE	I	ATT-SW of rear panel use for the single mode.This information transmit to mode control by communication. L : Single H : Normal
12	TBALDRV	O PWM	Output the tracking offset signal to PWM output, then use for auto tracking offset. 910 μsec period, tri-state control H, L,Z
13	XCD	O	LD/CD switch signal output pin. L : CD H : LD
14	XPLAY	O	Signal output during spindle servo. L : during servo H :during acceleration, brake and stop
15	SQOUT	I	Command data input from DSP. Read out SUBQ.
16	COIN	O	Command data output to DSP.
17	CQCK	O	DSP reading/writing command clock output pin. read at rising edge.
18	SLDDRV	O PWM	Slider control signal output pin. 5V=FWD, 0V=REV, 2.5V=STOP 910 μsec period, tri-state control H, L, Z
19	SI1	I	Data input from the mode control IC.
20	SO1	O	Serial data output to the mode control IC.
21	SCK1	I/O	Clock for serial communication with the mode control IC. Becomes input mode without communicate with the mode control IC.
22	TZC	I INT	Tracking error zero cross signal input pin. Monitor this signal when searching track count in the miss clamp detection.
23	SHAKE	I/O	Hand shake signal for data communication with the mode control IC. Each microcomputer controls input/output by bilateral data line.
24	TILTDRV	I/O	LOAD/TILT control output pin. 0.5V – tray IN, OUT/tilt DOWN, UP 2.5V – STOP Use for tilt servo that tilt drive is PWM output.
25	XANA	O	Digital/Analog audio switch signal output. L : Analog H : Digital
26	XPBV	I	Playback vertical sync. signal input of LD/CDV. L :during vertical sync.
27	CNVss	I	Ground pin for A/D conversion.
28	XRESET	I	Reset signal input. L : Reset H : Release reset Mode control is controlled.
29	XIN	I	9MHz clock oscillation input pin.
30	XOUT	O	9MHzclock oscillation output pin.
31	N.C.	O	Not used.
32	GND	I	Ground.
33	SW1	I	Switch input for Loading/Tilt position detection
34	SW3	I	
35	SW2	I	

No.	Pin Name	I/O	Function
36	N.C.	I	Not used.
37	FG	I	Spindle motor FG signal input. 16 outputs per rotation. Used after dividing by 2 in microcomputer.
38	DATA	I	Input pin for Phillips code decoder with built in mechanism controller.
39	XPBH	I	Playback H-SYNC input for Phillips code decoder.
40	XPBV	I	Playback V-SYNC input for Phillips code decoder.
41	TURNA	I	Turn switch input. H : side A L : side B
42	BINSIDE	I	Side B inside switch input. L : Side B inside H : others
43	MEMLAT	O	Serial control latch output of memory control IC (PD4510A). Latches at falling edge.
44	MEMORY	I	Memory yes/no determination input pin. H :memory yes L : memory no
45	DOCINH	O	Control the clamp pulse and clamp killer by tri-state values.
46	DETPOW	I	Use for power abnormal signal input port. L : Normal H : Abnormal
47	NROFF	O	Control output of the noise reduction by VDEM. L : Normal H : Not NR
48	WFM	I	Field determination signal from DVP. L : EVEN H : ODD
49	SQ1	O	Analog audio switch signal output 1/L. L : squelch OFF H : squelch ON
50	SQ2	O	Analog audio switch signal output 2/R. L : squelch OFF H : squelch ON
51	XCX	O	Analog audio CX noise reduction switch signal output. L : CX ON H : CX OFF
52	XVCECAN	O	Voice cancel output. L : CANCEL ON , H : OFF
53	SO3	O	Serial 3 data signal output. Serial signal is commoned, signal distinguish by latch signal (DVPLAT, TLAT).
54	SCK3	O	Serial 3 clock signal output.
55	DVPLAT	O	PD0192A serial latch signal output pin. Latches at falling edge.
56	TBCLOCK	I	Spindle lock signal input pin. L : Unlock , H : Lock
57	TLATCH	O	DAC & digital filter PD2026B serial control latch signal output pin. Latches at falling edge.
58	XREV	O	Side A/side B switch pin. H : side A , L : side B
59	DETAMP	I	Spindle over-current detection signal input pin. L : over current , H : Normal
60	FSEQ	I	Subcode sync. conformity detection signal input pin. L : Not conformity , H : Conformity
61	THOLD	I	Track jump accelerating/decelerating signal input pin. L : other H : accelerating/decelerating
62	WRQ	I	Subcode Q reading OK signal input pin. L : NG , H : OK This pin will be H when Subcode Q data passed by CRC check.
63	RWC	O	DSP read/write command signal output pin. L : READ H : WRITE
64	RWC2	I	Set to input port without influence when this pin short-circuit to pin 63.

9. BLOCK DIAGRAM

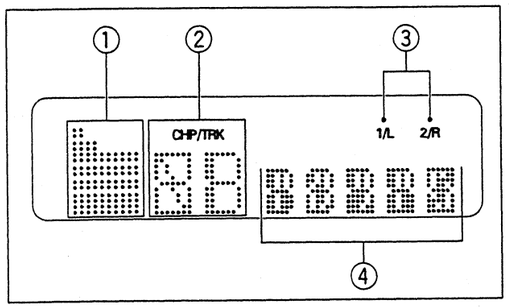


10. PANEL FACILITIES



① POWER switch
Press to turn the power on and off.
② STANDBY indicator
The indicator lights when the power is OFF (STANDBY).
③ LD disc table
④ CD disc table
⑤ DISC SIDE A, B buttons
⑥ CD open/close (⏏) button
⑦ LD open/close (⏏) button
⑧ PLAY (►) button
SKIP (|◄◄, ►►|) buttons
STEP (◄II, II►) buttons
SCAN (◄◄, ►►) buttons
⑨ STOP (■) button
⑩ PAUSE (II) button
⑪ PHONES LEVEL control
⑫ PHONES jack
⑬ BARCODE jack
⑭ KEY LOCK indicator
Lights when the KEY LOCK command is entered from the external control unit.
When this indicator is lit, entries are not accepted from operation buttons other than the power switch. Also, entries are not accepted from the operation button of the remote control unit or optional LaserBarcode reader.
⑮ Display window
⑯ Remote sensor
When using the remote control unit or LaserBarcode reader in the wireless format, the infrared commands from the unit are received here.
⑰ REPEAT button
⑱ DISPLAY button

Display window



① : Disc table open
: Play
: Pause
② Track number or chapter number is displayed.
③ Audio output channel lights.
④ Frame number or elapsed playback time is displayed.
• **Currently activated function, etc. is displayed.**

OPEN	: The disc table is opened or being opened.
CLOSE	: The disc table is being closed.
PLAY	: Start of disc playback
LD	: LaserDisc
CD	: Compact disc
CDV	: Compact disc with video
NO DISC	: No disc loaded
-OFF-	: Switching power OFF.

11. SPECIFICATIONS

1. General

System ..... LaserVision Disc system and Compact Disc digital audio system
Laser ..... Semiconductor laser wavelength 780 nm
Power requirements ..... AC 120 V, 50/60 Hz
Power consumption ..... 33 W
Weight ..... 6.9 kg (15 lbs 3 oz)
Dimensions ..... 420 (W) x 404 (D) x 132 (H) mm
16-9/16 (W) x 15-15/16 (D) x 5-3/16 (H) in.
Operating temperature ..... +5°C ~ +35° C (41°F – 95°F)

Operating humidity ..... 5% ~ 85%
(There should be no condensation of moisture.)

2. Video characteristics (2 pairs)

Format ..... NTSC color system
Video output
Level ..... 1 Vp-p nominal sync. negative, terminated
Impedance ..... 75Ω unbalanced
Terminal ..... RCA jack

3. S Video output

Y output level ..... 1 V p-p (75Ω)
C output level ..... 286 mV p-p (75Ω)
Jack ..... S VIDEO jack

4. Audio characteristics

Audio output
Level ..... 200 mVrms ±15 %, –20 dB (DA), 200mV, 40 % modulation (FM)
Terminal ..... Both RCA jacks
Number of channels ..... 2 (Stereo)
Digital Audio Characteristics

Frequency response	4 Hz - 20 kHz
SN ratio	115 dB (EIAJ)
Dynamic range	96 dB (EIAJ)
Total harmonic distortion	0.0035 % (EIAJ)
Wow and flutter	Limit of measurement (±0.001% W.PEAK)

5. Other Terminals

• BARCODE jack ..... Miniature phone jack
• PHONES jack ..... Stereo miniature phone jack
• INTERFACE CONNECTOR ..... 15 pin, D-SUB connector
• CONTROL IN jack ..... Miniature phone jack
• VHF ADAPTER OUTPUT jacks .....
Both RCA jacks with DC jack

6. Accessories

• Operating instructions 1
• Audio cord 1
• Video cord 1
• RF antenna cable with F-type plug 1
• Antenna adapter 1
• RF modulator 1
• Remote control unit 1
• Size "AAA" (IEC R03) dry cell batteries 2
• Barcode sheet 1

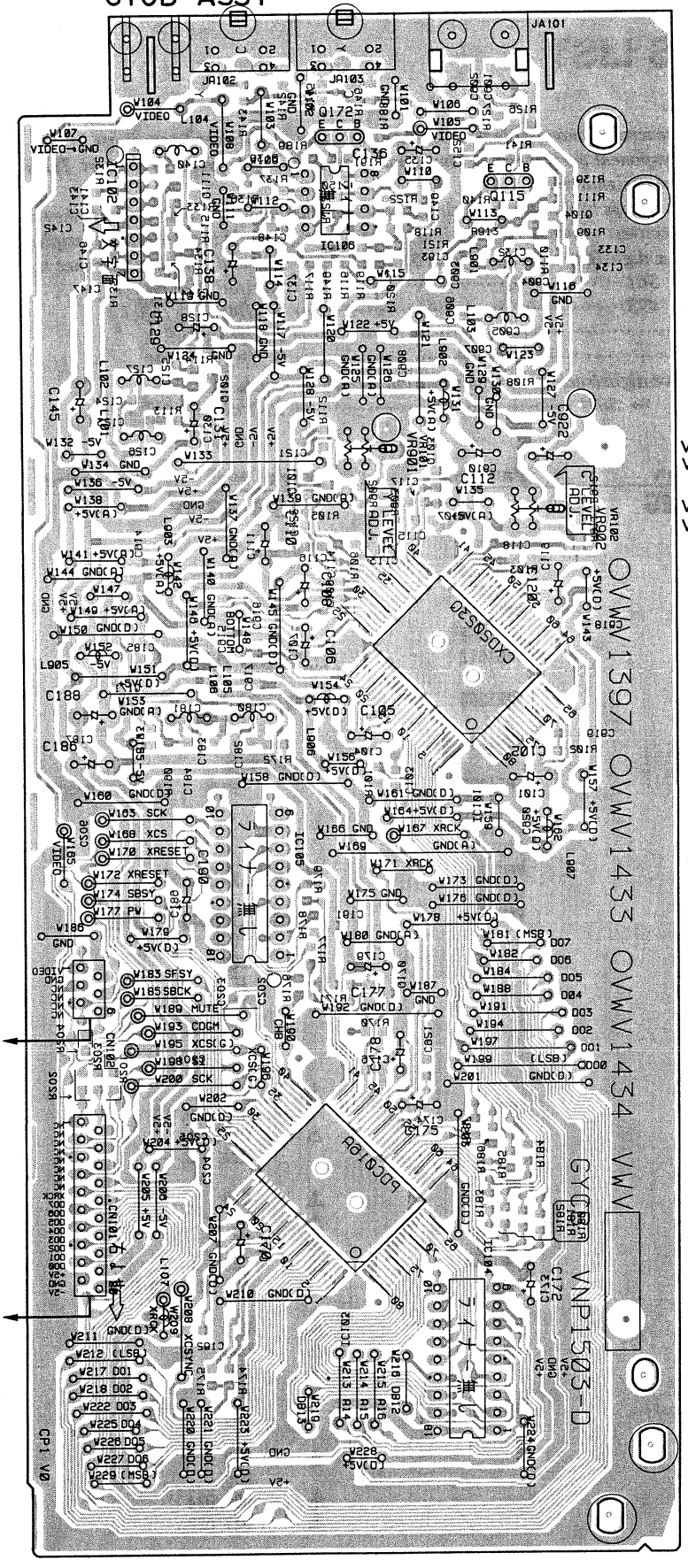
NOTE:
Specifications and design subject to possible modifications without notice, due to improvements.

LB 2 LaserBarcode 2 — This equipment accepts software with the LaserBarcode mark or the LaserBarcode2 mark.

BC CD Bar Code CD — This mark expresses compatibility with Bar Code CD systems. Please use only bar codes displaying this mark.

PCB – 4

GYCB ASSY



- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.
- This diagram is viewed from the mounted parts side.

4. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × 10¹ → 561 ····· RD1/8PM 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4PC 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
NSP		MACB ASSY	VWM1535
NSP		├─ PKSB ASSY	VWG1555
NSP		├─ FG ASSY	VWG1556
NSP		├─ TNSB ASSY	VWG1557
NSP		├─ BISB ASSY	VWG1558
NSP		└─ LMSB ASSY	VWG1612
⚠		SYPS ASSY	VWR1260
		MOTHER ASSY	VWS1241
		GYCB ASSY	VWV1397
NSP		FLMB ASSY	VWM1652
		├─ MDRS ASSY	VWG1710
NSP		├─ FLKB ASSY	VWG1711
NSP		├─ KEYB ASSY	VWG1712
NSP		└─ HEPB ASSY	VWG1713
MACB ASSY			
OTHERS			
		PCB(MACB)	VNP1479
PKSB ASSY			
SWITCHES			
	S104, S105		DSG1017
FG ASSY			
SEMICONDUCTOR			
	D101		GP1S24
TNSB ASSY			
SWITCH			
	S111		DSG1017

Mark	No.	Description	Part No.
BISB ASSY			
SWITCH			
	S112		DSG1017
LMSB ASSY			
SWITCHES			
	S101-S103		DSG1017
OTHERS			
	CN101	12P FFC CONNECTOR	52044-1245
SYPS ASSY			
SEMICONDUCTORS			
	IC20		HA17431P
⚠	IC2		ICP-N15
⚠	IC1		ICP-N20
	IC21		NJM4558D
	Q20, Q22		2SA1598
	Q27, Q30, Q32		2SA933S
⚠	Q24		2SB891F
	Q25, Q29, Q31		2SC1740S
⚠	Q2, Q3		2SC3377
	Q21, Q23		2SC4148
⚠	Q26		2SD2007
⚠	Q1		2SK1102
⚠	D7		1SS270A
⚠	D25		AG01Z-VO
	D26-D27, D30, D31		AG01Z-VO
⚠	D1		D2SB60F4004
⚠	D2		EG01C
⚠	D6		K1V24
⚠	D5		MTZJ2.7B
	D29		MTZJ8.2B
⚠	D20		PS2501L1-1M
	D40		RD33FB2
⚠	D23, D24		RK36
⚠	D21, D22		S3LA20

Mark	No.	Description	Part No.
RESISTORS			
⚠	R22-R25	(47Ω, 1/6W)	VCN1033
⚠	R27	(0.47Ω, 1/2W)	VCN1046
⚠	R29	(68Ω, 1/4W)	VCN1048
⚠	R31	(8.2Ω, 1/4W)	VCN1050
OTHERS			
⚠	F1	FUSE	REK1078
⚠	F2	FUSE	VEK1033
⚠	F3, F4	FUSE	VEK1034
⚠	F5, F6	FUSE(1.0A/125V)	VEK1036

MOTHER ASSY

SEMICONDUCTORS

	IC904	BA10393F
	IC202, IC205, IC903, IC905	BA4560F
	IC351	CA0002AM
	IC803	LA6510
	IC802	LC78681KE
	IC206	NJM78L08A
	IC207	NJM79L08A
	IC801	PAC002A
	IC901	PAC003A
	IC400	PAC005B
	IC500	PD0192A
	IC603	PD0223A
	IC101	PD0235A
	IC201	PD2026B(L)
	IC902	TA8410AK
	IC804	TC4W53F
	IC501	TC7S04F
	Q102, Q916	2PB709A
	Q201, Q202, Q451, Q475, Q805	2PD601A
	Q840, Q903, Q904, Q907, Q908	2PD601A
	Q915, Q917	2PD601A
	Q834	2SA854S
	Q411, Q803	2SC2412K
	Q152	2SC3802K
	Q204, Q205	2SD2144S
	Q208-Q212, Q918	UN2112
	Q103, Q206, Q207, Q901, Q910	UN2212
	D202	11EQS06
	D102, D180, D203-D206, D801	1SS254
	D901, D902, D905, D963	1SS254
	D802	1SS355
	D201	KV1851
	D110	MTZJ5.1B

COILS AND FILTERS

	L413	LAU100J
	L410	LAU101J
	L351, L802-L804	LAU181J
	L202, L204, L205, L352, L412	LAU220J
	L461, L470, L800, L801	LAU220J
	L411, L571	LAU270J
	L420, L421, L580	LAU430J
	L462	LAU560J
	L414	LAU8R2J
	L575	LFA010J
	L460	LFA561J
	F501 14.3MHz FILTER	VTF1055

CAPACITORS

	C562	CCSQCH050C50
	C436, C809, C811	CCSQCH070D50
	C159, C420, C421, C438, C466	CCSQCH100D50
	C583	CCSQCH100D50
	C258, C259, C370, C810, C846	CCSQCH101J50
	C848, C944	CCSQCH101J50
	C434, C437, C474	CCSQCH120J50
	C416	CCSQCH121J50
	C415, C418, C475	CCSQCH150J50
	C161, C199, C353, C812	CCSQCH151J50
	C352, C552	CCSQCH180J50
	C220, C232, C579, C813, C950	CCSQCH220J50
	C162, C417, C591, C935	CCSQCH221J50
	C371, C419, C433, C467, C931	CCSQCH270J50
	C106, C107, C354, C435, C452	CCSQCH330J50
	C553, C563, C580	CCSQCH330J50
	C351, C425, C476	CCSQCH390J50
	C260-C263, C464, C468, C939	CCSQCH470J50
	C787	CCSQCH471J50
	C375, C561, C806	CCSQCH680J50
	C374, C814	CCSQCH820J50
	C460, C462	CCSQCH910J50
	C367, C439	CEAL100M16
	C225, C226, C412, C484, C491	CEAL470M16
	C585, C588, C836, C844	CEAL470M16
	C850, C870	CEAL4R7M50
	C450, C838	CEALNP470M6R3
	C972	CEANP220M10
	C227, C281, C904	CEAS010M50
	C228	CEAS100M50
	C364, C424	CEAS101M10
	C274, C275, C821, C922, C967	CEAS220M25
	C845, C902, C926	CEAS2R2M50
	C101, C252, C253, C256	CEAS470M10
	C270, C271, C363, C369, C493	CEAS470M10
	C530, C534, C538, C550, C572	CEAS470M10
	C801, C803, C833, C842, C893	CEAS470M10
	C927, C933, C974, C975	CEAS470M10
	C207, C255, C257, C279	CEAS471M10
	C368, C913, C943	CEASR47M50
	C968, C987	CEHAQ220M50
	C917	CEJA101M6R3
	C490, C891, C907, C914, C936	CKSQYB102K50
	C981	CKSQYB104K25
	C919	CKSQYB332K50
	C361, C362	CKSQYB392K50
	C355-C358, C377, C909	CKSQYB472K50
	C105, C110, C122, C160	CKSQYF103Z50
	C196-C198, C213-C215, C231	CKSQYF103Z50
	C234, C251, C254, C286, C288	CKSQYF103Z50
	C372, C373, C376, C413, C451	CKSQYF103Z50
	C454, C485, C531-C533, C539	CKSQYF103Z50
	C570, C571, C577, C578, C581	CKSQYF103Z50
	C589, C641, C788, C802, C804	CKSQYF103Z50
	C807, C831, C832, C834, C835	CKSQYF103Z50

Mark	No.	Description	Part No.
	C843, C872, C876, C888, C892		CKSQYF103Z50
	C894, C918, C928, C929, C932		CKSQYF103Z50
	C937, C938, C941, C961, C962		CKSQYF103Z50
	C964, C971, C982		CKSQYF103Z50
	C102, C103, C151, C284, C285		CKSQYF104Z25
	C305, C365, C366, C422, C423		CKSQYF104Z25
	C453, C457, C458, C492, C494		CKSQYF104Z25
	C551, C574, C582, C587, C592		CKSQYF104Z25
	C840, C841, C847, C873, C874		CKSQYF104Z25
	C901, C910-C912, C915, C976		CKSQYF104Z25
	C983		CKSQYF104Z25
	C837, C921, C930		CKSQYF223Z50
	C359, C360, C905, C951		CKSQYF224Z25
	C280		CKSQYF333Z25
	C465, C808, C815, C875, C877		CKSQYF473Z25
	C924, C925		CKSQYF473Z25
	C942		CQMA103J50
	C920		CQMA104J50
	C479, C908		CQMA154J50
	C278, C282		CQMA182J50
	C903		CQMA222J50
	C973		CQMA224J50
	C934		CQMA681J50
	C483, C923		CQMA683J50
	C871	(10 μF/16V)	VCH1152
	VC901	(20pF)	VCM-008
RESISTORS			
	R521		RD1/6PM010J
	R341, R342, R420		RD1/6PM470J
	R259-R262		RD1/6PM473J
	R490, R987, R989		RN1/10SE103D
	R880, R883		RN1/10SE104D
	R879, R986, R990		RN1/10SE333D
	R881, R882		RN1/10SE473D
	VR450	(2.2kΩ)	PCP1025
	VR603	(4.7kΩ)	PCP1028
	VR604, VR607, VR608, VR612	(47kΩ)	PCP1031
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN108	12P FFC CONNECTOR	52045-1245
	CN121	16P FFC CONNECTOR	52045-1645
	CN102	21P FFC CONNECTOR	52045-2145
	CN103	23P FFC CONNECTOR	52233-2310
	CN106	11P TOP POST	B11P-SHF-1AA
	CN204	KR CONNECTOR 3P	B3B-PH-K-S
	CN110	B TO B CONNECTOR 12P	BTFN12S-3SB7
	CN113	B TO B CONNECTOR 6P	BTFN6S-3SB7
	JA3	REMOTE CONTROL JACK	RKN1004
		PCB BINDER	VEF1040
	JA6	4P PIN JACK	VKB1065
	JA13	RF PIN JACK	VKB1068
		SCREW TERMINAL	VNE1948
	KN101, KN102	EARTH PLATE	VNF1084
	X101	CERAMIC RESONATOR(9.00MHz)	VSS1040
	X201	CRYSTAL RESONATOR(16MHz)	VSS1057
	X550	CRYSTAL RESONATOR(14.318MHz)	VSS1073

Mark	No.	Description	Part No.
GYCB ASSY			
SEMICONDUCTORS			
	IC101		CXD2023Q
	IC106		MC14577CP
	IC102		TA7302P
	Q102, Q104, Q111		2PB709A
	Q101, Q103		2PD601A
	Q115, Q172		2SC1740S
COILS			
	L101-L103		LFA220J
	L104		LFA470J
CAPACITORS			
	C126		CCSQCH060D50
	C140		CCSQCH150J50
	C123, C127		CCSQCH220J50
	C125		CCSQCH390J50
	C124		CCSQCH560J50
	C132		CCSQCH910J50
	C145		CEAS100M50
	C102, C105, C110, C112, C129		CEAS470M10
	C131, C136, C138		CEAS470M10
	C103		CKSQYB102K50
	C135, C137, C141, C143, C144		CKSQYF103Z50
	C150		CKSQYF103Z50
	C101, C104, C109, C111		CKSQYF104Z25
	C113-C119, C121, C122, C128		CKSQYF104Z25
	C130, C133, C134, C142		CKSQYF104Z25
	C146, C147, C152		CKSQYF104Z25
RESISTORS			
	R126, R127, R145		RN1/10SC750D
	R121, R123		RN1/10SE222D
	R105, R107		RN1/10SE271D
	R116, R117, R902, R911		RN1/10SE332D
	R903		RN1/10SE392D
	R103, R106		RN1/10SE472D
	R912		RN1/10SE562D
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN101	B TO B CONNECTOR 12P	BTFN12P-3RD7
	CN102	B TO B CONNECTOR 6P	BTFN6P-3RD7
	JA101	2P PIN JACK	DKB1028
	JA103	4P MINI DIN SOCKET	VKN1072
		PIN JACK PLATE	VNE2021
FLMB ASSY			
OTHERS			
		PCB(FLMB)	VNP1537

Mark	No.	Description	Part No.

MDRS ASSY

SEMICONDUCTORS

	IC102		M6M80011AL
	IC103		MAX232EPE
	IC101		PD5361A
	IC105		S-806D
	Q102		DTA144ES
	Q101, Q103, Q104		DTC114ES
	D101		1SS254

COIL AND FILTERS

	L101		LAU010J
	F101-F105	EMI FILTER	VTH1009

SWITCH

	S101		RSH1043

CAPACITORS

	C130		CCCCH271J50
	C128		CCCCH560J50
	C112, C113		CEAL010M50
	C110, C111		CEANP010M50
	C104		CEAS100M25
	C101, C106, C108, C115		CEAS470M10
	C102		CKPUYF103Z25
	C103, C105, C107, C109, C114		CKPUYF223Z25

RESISTORS

	R129		RA8S472J
	Other Resistors		RD1/6PM□□□J

OTHERS

	CN101	16P FFC CONNECTOR	52044-1645
	CN102	17P FFC CONNECTOR	52044-1745
	JA101	15P D-SUB SOCKET	DKN1111
	X101	CERAMIC RESONATOR(8.0MHz)	EFOEC8004A4
	CN103	KR CONNECTOR	S2B-PH-K-S

FLKB ASSY

SEMICONDUCTORS

	IC104		MSC7112-01SS
	Q105		DTC114ES
	D102, D103		SLR-342DCT31

SWITCHES

	S102-S104		RSG1030

CAPACITORS

	C119		CEAL100M25
	C121		CEAL2R2M50
	C124		CEAL470M10
	C141		CKCYF103Z50
	C122		CKPUYB101K50
	C120, C123		CKPUYF223Z25

RESISTORS

	All Resistors		RD1/6PM□□□J

Mark	No.	Description	Part No.

OTHERS

	CN107	FFC BOTTOM CONNECTOR 13P	52492-1320
	CN106	FFC BOTTOM CONNECTOR 17P	52492-1720
	IR101	INFRARED SENSOR	GP1U58X
	V101	FL TUBE	VAW1035
		SPACER	VEC1599
		FL HOLDER	VNF1087

KEYB ASSY

SEMICONDUCTORS

	D106, D107		SLR-342MC3F
	D104, D105		SLR-342YC3F

SWITCHES

	S105-S115		RSG1030

RESISTORS

	All Resistors		RD1/6PM□□□J

OTHERS

	CN108	FFC BOTTOM CONNECTOR 13P	52492-1320
		PCB BINDER	VEF1040

HEPB ASSY

COILS AND FILTERS

	F118	FERRITE BEAD	DTF1003
	L102, L103		LAU221J
	L104		LFA221J
	F115-F117		VTH1016

CAPACITORS

	C118		CKCYF473Z50
	C116, C117		CKPUYB101K50

RESISTORS

	VR101	(0.5kΩ)	VCS1015
	Other Resistors		RD1/6PM□□□J

OTHERS

	JA102	REMOTE CONTROL JACK	RKN1004
	CN104	KR CONNECTOR	S2B-PH-K-S
	CN105	KR CONNECTOR	S3B-PH-K-S
	JA103	HEADPHONE JACK	VKN1149

5. SELF-DIAGNOSTIC FUNCTIONS

5.1 SELF-DIAGNOSTIC FUNCTIONS

The self-diagnostic functions automatically display an error code on the FL display when there is an error. The customer checks the error code and conveys it to the service personnel to make repairs more efficient.

After an error occurs, even if the error code goes off, you can display the error code again by holding down the [CLEAR] key for 5 seconds (except a loading error [L *] display). However, if the power cord is unplugged, the error code information is lost.

The possible cause when an error was generated in the CLD player is described below.

Self-diagnostic error code	Contents	Conditions	Probable cause
H0	Spindle overcurrent detection error.	In the play state, overcurrent was detected in the spindle motor. Monitoring starts 5 seconds after the start of play or special playback mode, this error is detected if the overcurrent port is "L" for 4 seconds.	• Motor NG • Clamper rubbing
U0	FG abnormality error	① At LD start-up, the rate of rotation calculated from the FG was less than 15 rpm for 5 consecutive seconds from the spindle run command. ② At CD start-up, there was less than 1/8th rotation even after 5 seconds had passed since the end of acceleration. ③ During play search, CD : subcodes are being read/LD : Phillips codes are being read and the spindle is locked, but a state in which the rate of rotation calculated from the FG was less than 15 rpm continued for 5 seconds or more. In the above case, it is judged that an abnormality has occurred in the FG sensor and that accurate rotation rate calculation has become impossible.	• FG sensor abnormality, FG signal not coming to mechanism controller • FG sensor clogged • Rubbing between FG sensor and slit • Turntable dropped • FG slit deposition NG
H1	Partial short error	① At LD start-up, the speed did not reach 1200 rpm within a certain time (12 seconds) after the spindle run command. ② At CD start-up, a certain speed (313 rpm) was not reached within 6 seconds from the end of spindle acceleration.	• Spindle motor NG • Commutator NG • Bearing too tight • Power supply NG
H2	Power supply abnormality error	– 5V power supply abnormality detected. The power supply abnormality port is constantly monitored and if its signal stays high for about 1 second consecutively, the power supply is judged to be abnormal.	• – 5V not fed from SYPS assy • Parts shorted
L *	Loading error	① When loading operation goes over time (approx. 10 sec.). ② When assist at disc sense entry ends and is not tilt neutral. ③ When assist at set up entry ends and is not tilt neutral.	• Tilt switch 1, 2, 3 abnormal, so tilt/loading state not read in correctly • Tilt/loading mechanism mechanically locked • Drive IC NG • Power supply NG
E *	Slider error	During slider movement, a time over-run occurred (track count search 20 seconds, mandatory movement 10 seconds).	• Slider ceased being able to run • The slider mechanism is mechanically locked and can no longer move to its target. • Slider position switch NG • Flexible cable pulled out • Drive IC NG • Power supply abnormal
U1	Miss clamp error	① During LD setup, after 1/8th rotation, the track count during 1/8 rotation exceeded 511. ② During start-up, the focus was lost once and refocusing was attempted, but the focus could not be locked. ③ When the spindle motor rotation is stopped once before CDV A ⟷ V area change, but stop is not carried out within 2.0 seconds, it is determined that there are two discs on each other and clamp error is set. ④ Two FG pulses did not come within 800 ms from the start of LD start-up. ⑤ During CD startup, it took more than 860 ms to reach 416 rpm (CD+LD both mounted detected). ⑥ The disc clamp operation did not end within 5 seconds.	• Disc sandwiched • Disc shifted • Spindle motor NG • Disc scratched or dirty defocused during start-up • Two discs loaded • PU actuator NG • Tilt sensor NG • Tilt neutral NG (tilt base NG)

Self-diagnostic error code	Contents	Conditions	Probable cause
P *	Spindle error	①During TOC reading with an LD, the spindle servo was not locked within 60 seconds from the start of the spindle run. ②When CAV/CLV determination is not finished within 60 seconds from spindle servo lock. ③The codes could not be read for 10 – 15 seconds consecutively for an LD or 7 – 10 seconds for a CD/CDV and the spindle servo was not locked. ④The speed exceeded 2100 rpm during LD start up.	P0 :•PH code, SUB-Q code can not be read •VCO, PLL offset out of adjustment •Disc defect P5:•PAL disc, mirror disc, etc. PLAY •No RF P6:•Spindle servo does not lock •Spindle motor NG
F *	Focus error	①In the "no disc" state, a setup command was received from the mode controller. ②When LD is out of focus when slider is moved to starting position during set up. In case of CD/CDV is NG even after three focus tries. ③During start-up, the maximum slider servo duty continued for 3 loops or more.	F5 :•CD, LD on top of each other •LD scratched or dirty defocused during slider movement •Disc NG •Slider position switch NG F6 :•Inner edge of disc scratched or dirty •Slider ran into inner edge mechanical stopper

* Besides the above errors, there is the "U2" communications error (the mode controller could not communicate normally with the mechanism controller). The probable cause is a defective mechanism controller, disconnected cable, etc..
* After the error display goes out, it can be displayed again by holding down the CLEAR key for at least 10 seconds.
Mechanism mode contents (meanig of * for L * etc.)

0 : Play
1 : Open
2 : Standby
3 : Clamp
4 : Disc sense
5 : Setup (rotation start)
6 : TOC read
7 : Play
8 : Search
9 : Side A → Side B
A : Side B → Side A

5.2 FUNCTION SWITCHES

Set the player's function by the function switch on the rear panel after the power is on.

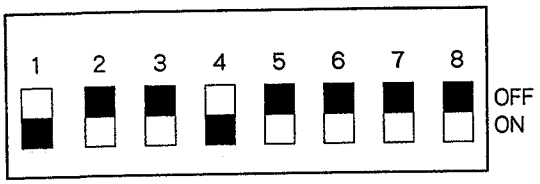


Fig. 1

SW No.	Function	ON	OFF	At shipment
1, 2	BAUD RATE	Refer to Table 2.		4800bps
3, 4	REPEAT MODE	Refer to Table 3.		Side repeat
5	POWER ON START LOAD START	Auto start	Not auto start	Not auto start
6	BACK COLOR	BLACK	BLUE	BLUE
7	Alternately operation	ON	OFF	OFF
8	Not used			

Table 1

SW1, 2 : Set the baud rate of RS-232C.

SW1	SW2	Baud Rate
OFF	OFF	9.6kbps
ON	OFF	4.8kbps
OFF	ON	2.4kbps
ON	ON	1.2kbps

Table 2

SW3, 4 : Set the repeat mode.

SW3	SW4	Repeat mode
OFF	OFF	Stop after the single side is playbacked.
OFF	ON	Stop after the double sided is playbacked.
ON	OFF	Repeat the single side.
ON	ON	Repeat the double sided.

Table 3

SW5 : When closing the tray at ON, start the playback automatically.
And when the power is on at ON, start the playback automatically if the disc is already inserted.

SW6 : Selects the background color of the screen in the video squelch.

SW7 : When the playback is finished at ON, supply a command which is played the next player from the RS-232C port.
Thus, serial playback will possible with the secondary player.

6. CHECK FOR THE EXTERNAL INPUT

Note)
- The contents described in this section are tentative. Specifications may be subject to change.
- Each supplementary item can be viewed in a DOS standard TEXT format together with a program using DOS commands (type and more), a pager, an editor, and a word processor.
  It is expected that the distribution file is converted into a compression file based on a self-defrosting format. In this case, confirm the distribution file using a DIR command and execute the command if any files other than PCRS. EXE exist. The file is then defrosted.

Example)
When the file specified using a DIR command is PACKED.
EXE or PACKED. COM, execute a packed command.

6.1 OUTLINE

The program inspects the following.

- Confirms that the personal computer can communicate with the CLD - V5000 via RS - 232C.

If there is no problem in this inspection, the hardware of the CLD - V5000 is normal.

The checking program operates in a PC - 9801 and PC/AT compatible MS - DOS system. Prepare the MS - DOS environment. We recommend to use an MS - DOS system of more than version 5.0. This checking program also operates in a DOS/V system.

For hard disk environment, copy the checking program to the place where a path is passed or shift the current directory to the place where a program exists, then execute. For floppy disk environment, shift the current drive to the floppy, then execute.

Since PC - 98 and AT differ in a DOS device routine and boot loader, both PC and AT cannot use one floppy disk in common as a system disk.
For a floppy disk, it is necessary to prepare another system disk for operation. If the system disk is used in either PC or AT, only one system disk is required for operation.

The common checking program, in PC - 98 and AT is only one. Each model is inspected in a program, and the internal routine is changed according to the personal computer used. Therefore, careful attention is not required during use. The RSDRV. SYS file supplied for a DOS system is not required.

6.2 TOOLS REQUIRED FOR CHECK

- Personal computer : PC - 9801
- MS - DOS : Version 3.1 or higher (PC - 98)
- 25-pin to 15-pin serial cable
- Check program disk (2DD) : GGF1263

6.3 CHECK METHOD

1) The program in a floppy disk is a compressed file based on a self-defrosting format. Execute PACKED and open the defrosting file.
2) Make the baud rate of a personal computer coincide with that of a player.
3) Connect the CLD - V5000 and personal computer using a 25-pin to 15-pin serial cable and enter the following from the command line.

   CHKRS □ - T
   (Space)

4) If the RS - 232C communication between the player and personal computer is normal, the following display appears.

   PC - 98 was recognized.
   Press any key for termination.
   ?X (PC send command)
   P154201 (Player return command)
   ?X
   P154201
   ⋮
   (Press any key for termination.)

5) If the RS - 232C communication between the player and personal computer is abnormal, the following display appears.

   PC - 98 was recognized.
   Press any key for termination.
   ?X (PC send command)
   ?X
   ?X
   ?X
   ⋮
   (Press any key for termination.)

Note : GGF1263 is a check program disc developed for laser active interface pack : PAC - PC1. The program is partially used to check the RS - 232C communication. For more information on the contents of the GGF1263 program, refer to the PAC - PC1 service manual (RRV1219).

7. ADJUSTMENTS

7.1 TEST MODE

1)How to start the test mode

On the MOTHER ASSY, Short circuit the test mode JP W490 and W491, the test mode is started by pressing the power switch ON. (Fig. 1)

Confirm that the test mode display (Fig. 2) appears on the monitor screen and disconnect the test mode jumper from GND. To use an exclusive remote controller for test mode, press the ESC key of the exclusive remote controller (GGF1067) for test mode, then the TEST key with the power switch turned on.

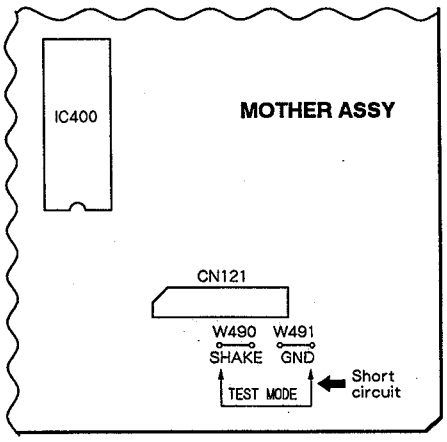


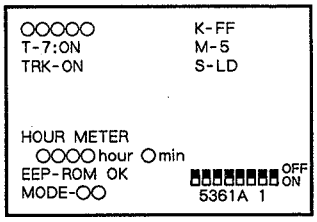
Fig. 1

2)How to cancel the test mode

Turn power switch OFF. Or, press test mode remote control ESC key.

3)Functions and key control when in test mode

Note : For keys not on player or on accompanying remote control, use test mode remote control unit (GGF1067).



TV screen display

Fig. 2

Note : When you open the tray in test mode, the screen displays goes out. To display the screen again, press the [DISPLAY] key.

• Key Operation In the Test Mode

Player Status	Key Operation	Function	TV Screen Display
Tray Open	⏮/⏭ SKIP (Refer to Note 1)	⏮ : Shifts the tray in the closed direction and also raises the turn table while pressing the key. ⏭ : Shifts the tray in the open direction and also lowers the turn table while pressing the key.	
Tray Open	▶ PLAY	Clamps	
Clamp	▶ PLAY	Turns the disc through TRK Servo OFF	TRK-OFF
TRK Servo OFF	▶ PLAY	TRK Servo ON	TRK-ON
TRK Servo ON	▶ PLAY	TRK Servo OFF	TRK-OFF
TILT Neutral	+ MULTI-SPEED	TILT Servo ON	T-□:ON
TILT ON	- MULTI-SPEED	TILT Neutral	T-□:N
TILT Neutral or ON	⏮/⏭ SKIP	Setting TILT Servo to OFF, can force TILT to move.	T-1 to T-E
Clamp	◀◀/▶▶ SCAN	Can force the slider to move	S-LD S-BIN S-CDV S-CD S-IN
Play	❙❙ PAUSE	Still	
Play	■ STOP	Stop	
Stop	▲ OPEN	Open	
Play	[+10] ⇩ [0] to [9] ⇩ [▶ PLAY]	Set to SEARCH lead address input mode. Designates the SEARCH lead address through keys 0 to 9. Press the CLEAR [C] key if the designated address is incorrect. Searches the designated address upon pressing the PLAY key.	

Note 1 : Press SKIP (⏮/⏭) keys after the tray is set to open state by pressing OPEN (▲) key. Because, in tray open state, pressing PLAY (▶) key causes is to set to clamp state and SKIP (⏮/⏭) keys can not function properly.

Table 1

• Player Operation in the Test Mode (Disc tray is removed)

Operate the player by selecting a test mode function with the keys on the player or on the remote control unit.

• CD PLAYBACK

① Place the CD disc on the turn table.

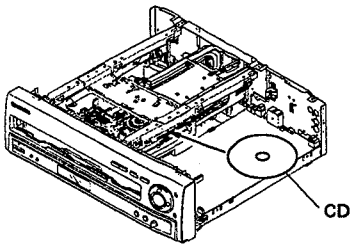


Fig. 3

② Press the PLAY (▶) key once.
(Twin gear starts to move.)

③ Push the Cam plate (Fig. 4) in the direction of the arrow and wait until the CD disc is clamped.

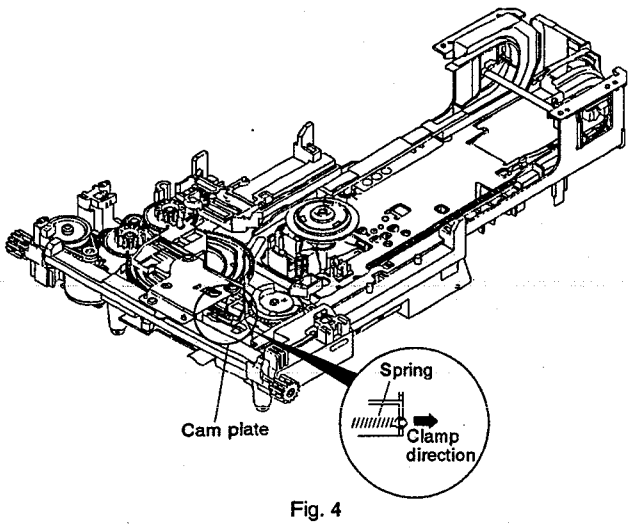
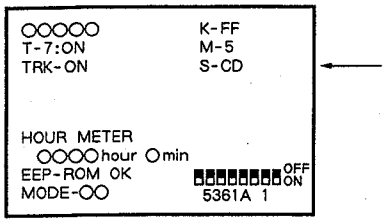


Fig. 4

④ Press the ◀◀ or ▶▶ keys to appear "S - CD" on the TV screen display.



TV screen display

Fig. 5

⑤ Press the PLAY (▶) key twice, disc will be normally playbacked.

• LD PLAYBACK

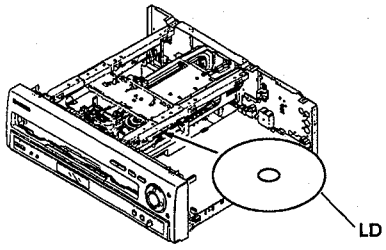
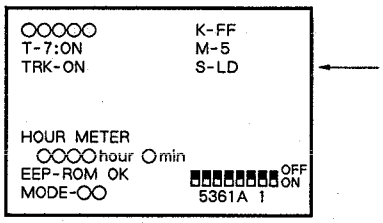


Fig. 6

① Press the SKIP REV (|◀◀) key to raise the turn table (spindle motor section) while pressing the Cam plate (Fig. 4) in the direction of the arrow.
Raise it to the position where the LD disc can be easily placed on the turn table.
If the turn table is raised too high, lower it with the SKIP FWD (▶▶|) key.

② Place the LD disc on the turn table and press the PLAY (▶) key once to clamp the disc.

③ Press the ◀◀ or ▶▶ keys to appear "S - LD" on the TV screen display.



TV screen display

Fig. 7

④ Press the PLAY (▶) key twice, disc will be normally playbacked.

7.2 ADJUSTMENT PRECAUTIONS

• Equipment and jigs needed for adjustment

- CD test disc (YEDS-7)
- LD test disc (GGV1012)
- Medium-sized blade screwdriver
- Small blade screwdriver
- Large Phillips screwdriver
- Medium-sized Phillips screwdriver
- Two-channel oscilloscope (with delay)
- Frequency counter
- TV monitor

• Preparation for Adjustment

1. Disc tray removal

① Remove the seven screws Ⓐ fastening the Bonnet and remove the Bonnet.

② With the power supply on, press the OPEN/CLOSE (LD) button and put the Disc tray in the open position.

③ While pushing the hooks Ⓑ on both sides of the rear of the Disc tray inwards, pull out the Disc tray.

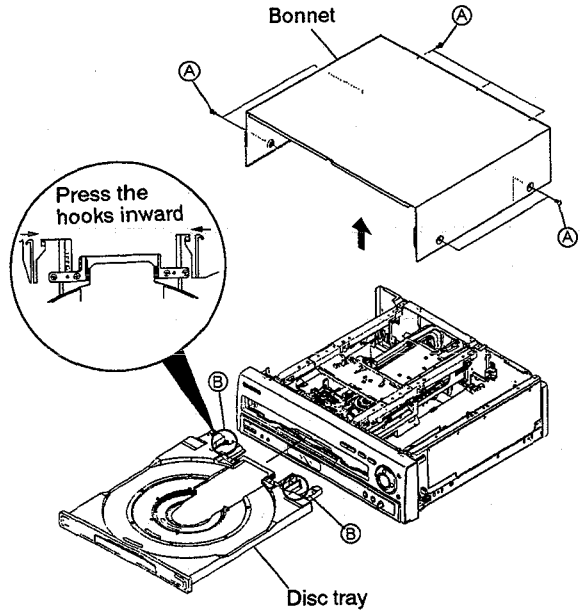


Fig. 8

Note: The adjustments other than "Electrical Adjustments 3. PLL OFFSET Adjustment" can be carried out with the Disc tray mounted.

2. Diagnostic method of MOTHER assy

① Remove the four screws Ⓒ fastening the Rear panel (L). (Fig. 9)

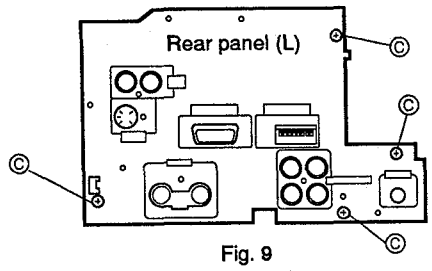


Fig. 9

② Remove a screw Ⓓ fastening the front side of PCB holder. (Fig. 10)

③ Remove the two screws Ⓔ fastening the MOTHER assy. (Fig. 10)

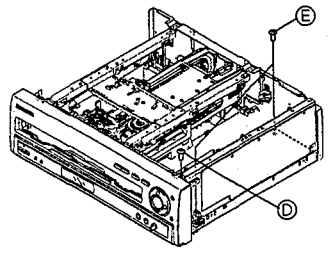


Fig. 10

④ Loosen the binder for fixing flat cable in the MOTHER assy.

⑤ While pulling up the Rear panel (L) toward the rear, MOTHER assy will be removed with the Rear panel (L). Then MOTHER assy can be diagnosed by standing it as shown in Fig. 11.

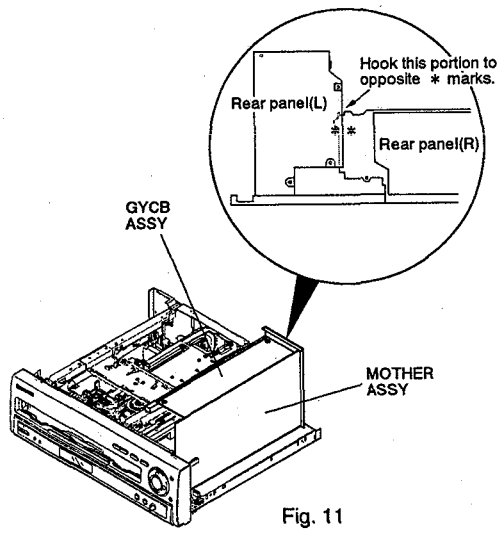


Fig. 11

Note 1: The MOTHER assy can be diagnosed with the Disc tray mounted.

Note 2: When inserting the Disc tray, please hold down the flat cable without hanging to the tray.

• Before adjusting mechanism system

• Centering adjustment screw and TAN adjustment screw

Note: Be careful not to turn Centering adjustment screw and TAN adjustment screw past their adjustment range.

After the adjustments, apply the lock-tight to Centering and TAN adjustment screws.

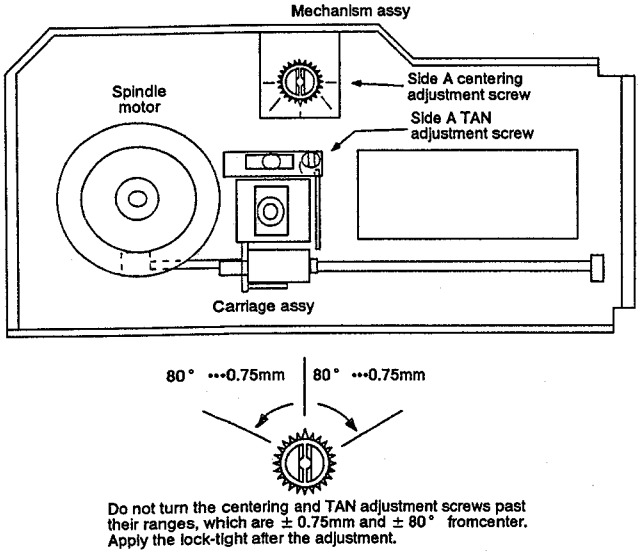


Fig. 12 Mechanism assy adjustment(side A)

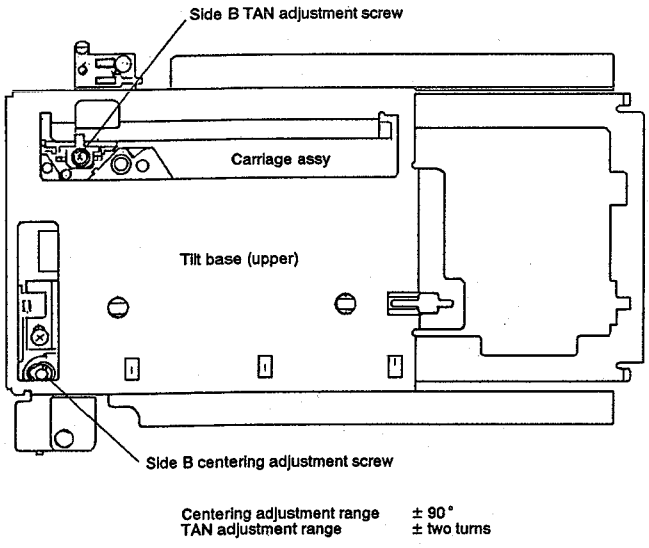


Fig. 13 Mechanism assy adjustment (side B)

• The mechanical adjustments can all be carried out with disc tray mounted.

• Notes when adjusting centering

If waveform S/N is bad and difficult to observe in "3 and 8. SPDL motor centering adjustment" use the low pass filter in diagram. (Fig. 14)

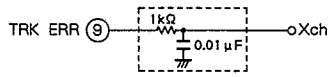


Fig. 14 Low pass filter

• Carriage assy position when adjusting centering

When moving slider to inner position to adjust the innermost track of disc during centering adjustment, be careful not to keep the Mechanism stopper and Carriage assy from bumping each other. (Fig. 15)

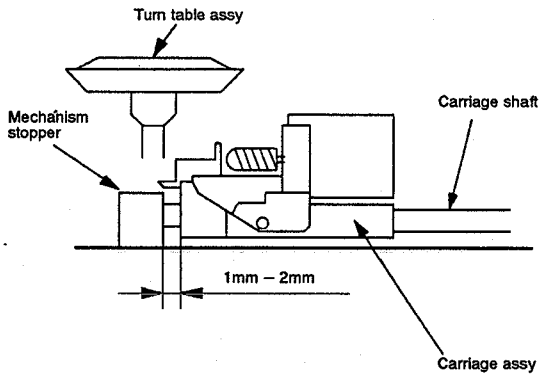


Fig. 15

• Notes when adjusting Pickup assy

Please clean lens first when readjusting the Pickup assy that is on this product. Also, when changing Pickup assy, change whole Carriage assy (VWT1110).

7.3 HOW TO INSTALL THE FLEXIBLE CABLE

1. Bend the Flexible cable as shown in Fig. 16.

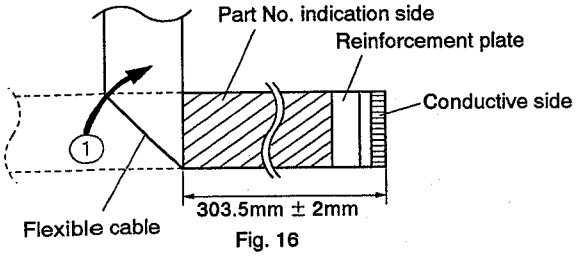
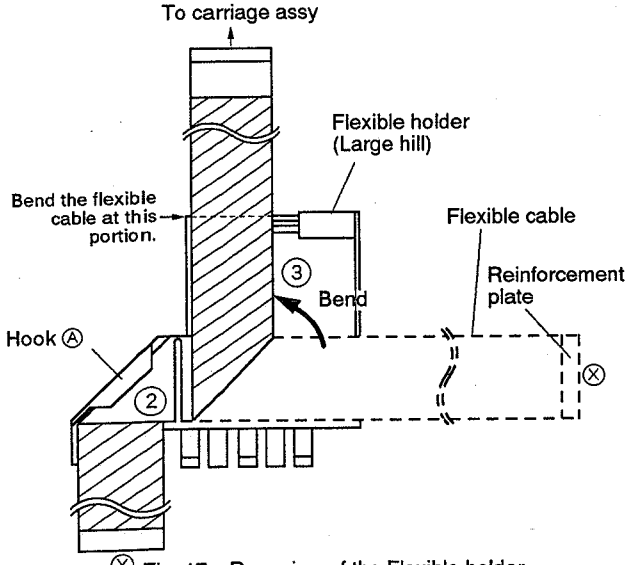


Fig. 16

2. Put the bended portion in step 1 to hook Ⓐ of the Flexible holder(Large hill) in the rear of Mechanism assy. (Fig. 17)



Ⓨ Fig. 17 Rear view of the Flexible holder

3. Bend the Flexible cable along the wall of Flexible holder.
4. Pull the Flexible cable not to slackened after passing the Ⓧ edge side of Flexible cable through the Flexible holder as shown in Fig. 18.

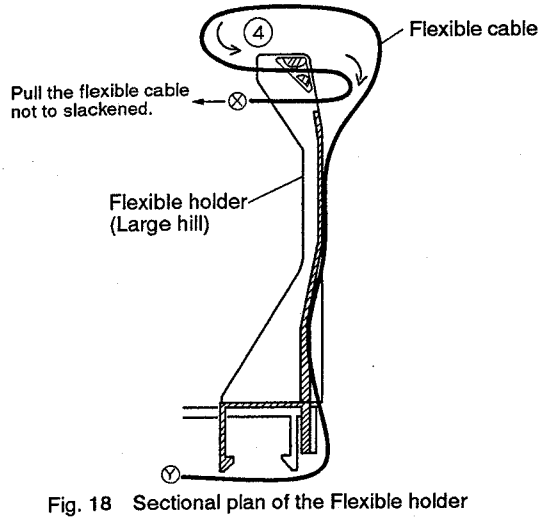


Fig. 18 Sectional plan of the Flexible holder

5. Put the Flexible cable to hook Ⓑ after the Ⓨ edge side of Flexible cable is bended along the hook Ⓑ position of the Tilt base (lower) in the bottom section of Mechanism assy, then insert to connector CN103 of the MOTHER assy.

Caution: Be sure to insert the MOTHER assy side of Flexible cable first of all for prevent the damage of laser diode by the static electricity.

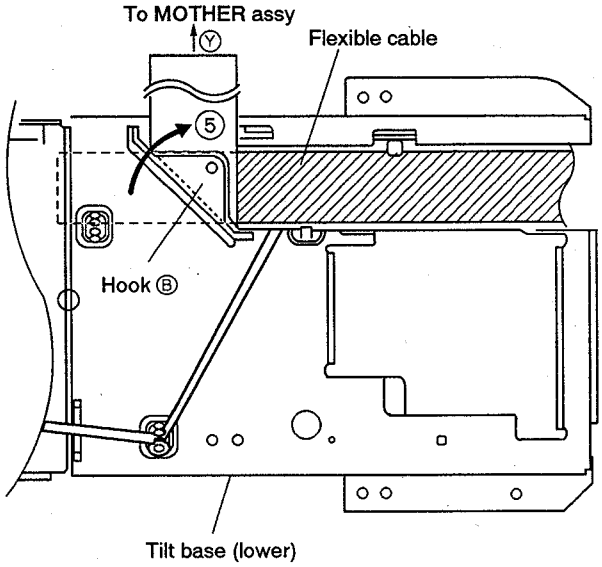


Fig. 19 Bottom view of the tilt base (lower)

6. Insert the Ⓧ edge side of Flexible cable to connector of the Carriage assy after passing through the Cable holder. (Fig. 20)
7. Move the Cable holder to touch the connector, lock the Cable holder to turn up the Flexible cable to lower side.

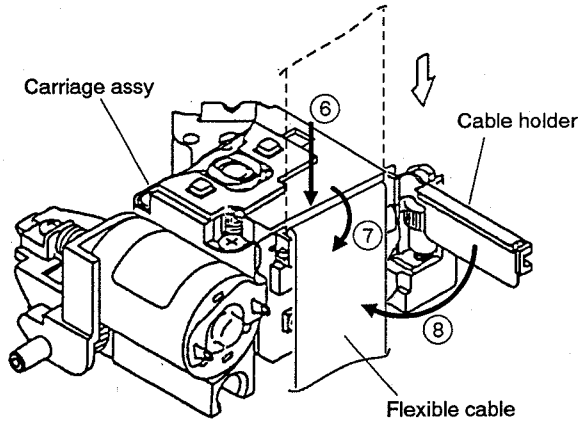
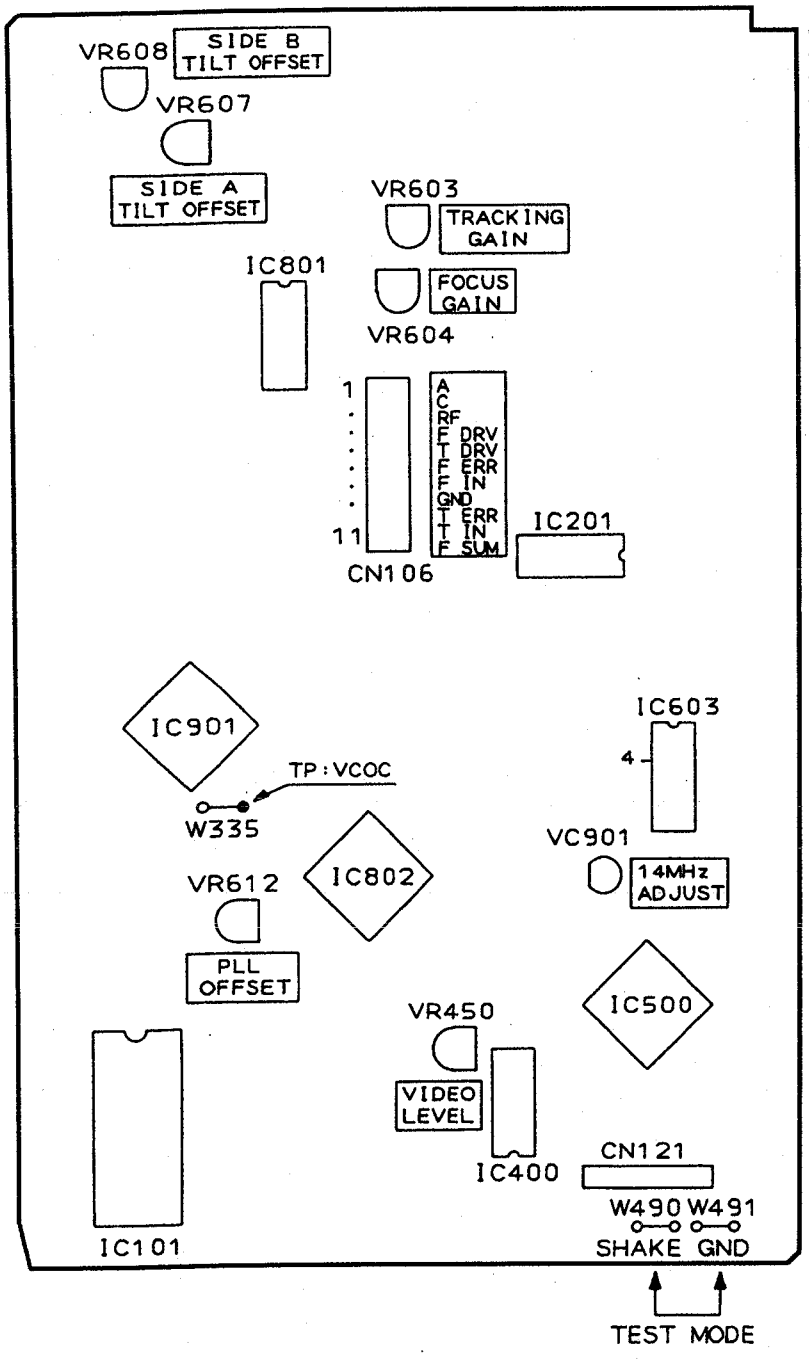


Fig. 20

7.4 ADJUSTMENT LOCATION

- **MOTHER assy adjustment location**



VR607: Side A tilt offset adjustment
VR608: Side B tilt offset adjustment
VR604: Focus servo loop gain adjustment
VR603: Tracking servo loop gain adjustment
VC901: Master clock adjustment
VR450: Output video level adjustment
VR612: PLL offset adjustment
(Orderin adjustment)

Fig. 21 Adjustment diagram of MOTHER assy